

SyncWare News

The journal for technical
applications of T/S
computers

Volume 5 Number 2

Nov.-Dec. '87

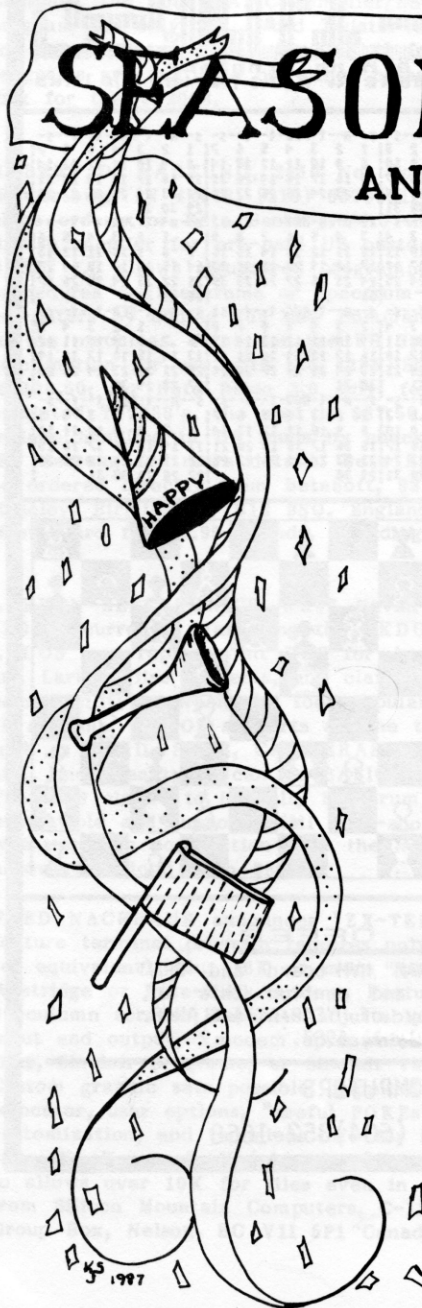
SEASON'S GREETINGS AND A HAPPY NEW YEAR!

SEASONS GREETINGS?

Even though the snow is coming down outside my window and the local fire department has strung Christmas lights across our downtown streets, I still can't believe we're into the Holiday Season already. I vividly remember just sitting down and writing the Holiday Greeting for issue 4:2. Nevertheless, from all of us at SyncWare News, to all of you, may you have the happiest of Holidays and a prosperous New Year!

WE ASKED FOR IT...

And boy, did we ever get it! The response to our inquiries regarding inclusion of PC material in SyncWare News has started to come in. The reactions we've received so far just might astonish you, they sure surprised us! We've included parts of all the letters we've received in this issue's Forum. No decision has been made yet as to whether or not we'll include PC related material. There's still time to get your two cents worth in. Take a look at what's in Forum this issue, then drop us a line or two telling us how you feel concerning this venture. We'd like to hear from ALL of you.



SILICON MOUNTAIN COMPUTERS announces TRUE HIGH RESOLUTION SOFTWARE for the ZX81/TS1000. You read it right! Without any expensive hardware add-ons, your computer can now run software that even its designers never dreamed possible. Thanks to an amazing discovery by Wilf Rieger, and innovative programming by Gregory Harder and Fred Nachbaur, you no longer have to suffer the "low res blues." Multiple character sets, 256x192 graphics, 64-column screens, UDG's, even SPRITES are now available for your computer!

NO computer modifications are required. If you have a ZX81, TS1000, or TS1500, with a 16K (or larger) RAM pack, plus an 8K static RAM board, you already have all it takes to run this remarkable software. Suitable static RAMs include the popular "Hunter" board, or similar designs (see SyncWare News vol. 4 no. 1 for one such project costing under \$10). Alternately, consider our 8K "SCRAM" board (described below).

All prices include shipping in USA and Canada. Foreign orders: please add \$5 for air shipping. CDS\$ accepted at par from Canadian customers. Write for catalog of other available software. At SILICON MOUNTAIN COMPUTERS, the ZX01 family of computers is our ONLY specialty. Our goal is to develop the most progressive software ever created for these machines. We feel that the software listed below propels these machines into mainstream computing; we think that you'll agree.

With the loss of the "Hunter" board from the market, we saw the need for an improved functional equivalent, at a lower price! This board works with ZX81/TS1000 or TS1500, has on-board battery back-up protection, and supports all of our high-res software with no modifications. It can be mapped in 0-8K (ROM overlay), 8-16K (normal operation), even 16-24K or 24-32K.

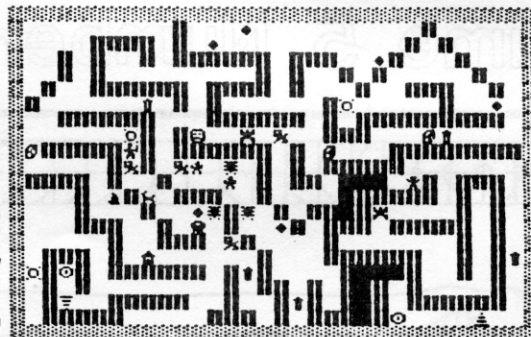
Other features include:

- * DIP switch to deselect 2K blocks
- * Board enable switch
- * Write-protect switch
- * RESET switch easily installed (optional)
- * Very low power drain
- * Feed-through connector
- * FULLY ASSEMBLED! Just plug it in.
- * Use with other machine-code software

PRICE: \$39.95 including shipping.

This D&D-style graphic adventure game is the most challenging, complex and spectacular entertainment software ever written for the ZX81 family of computers. 9 levels, 124 monsters (16 types), 5 spells, 15 objects. VERY addictive, VERY challenging, VERY impressive graphics. 100% machine-code, yet takes up all available memory in 15K. One reviewer calls it "5-star software" and "a must have." We know that you'll agree.

***** NEW LOWER PRICE *****
PRICE: \$19.35 including shipping



Bit= 14 | Exp=4640 | Co 0 | Te1 | S42 | Pr2 | R10 | No45

SRAM HI*RES EXTENDED BASIC is the flagship of our new line of software. With this remarkable package YOU can write high-resolution applications... ENTIRELY IN BASIC! While using only 4K of memory, SRAM HI*RES adds 38 new hi-resolution commands. If you know how to program in Sinclair BASIC, you will find SRAM HI*RES easy to learn and use. A revolutionary syntax system allows ANY variables or expressions to be used in your commands. NO REMs to pass parameters! NO POKes! A single USR call is used for ALL commands! Most commands can be chained into MULTIPLE STATEMENT LINES! We even included a fast (8.5x normal) set of tape routines! The most reliable tape system ever written. Other features:

- * Three 32-column PRINT modes
- * Lower-case and new symbols
- * 64-column PRINT mode
- * 128 User-defined characters
- * Scroll WINDOWS any direction... a pixel at a time!
- * Up to 32 TRUE sprites! Speed adjustable.
- * Invert windows or entire screen
- * Software-only video reverse
- * PLOT, DRAW, CIRCLE, RECTANGLE, TRIANGLE
- * TS2040 printer supported
- * Much more!

PRICE: \$24.95 incl. complete manual & shipping

This calendar/appointment book program demonstrates the power you have using SRAM HI*RES Extended BASIC. Enter, update, delete, list, print messages and reminders for any day of any year 1800-2099. Program structure will remind you of much larger machines which shall remain nameless....

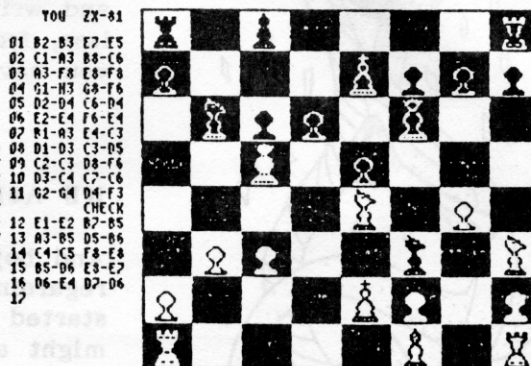
PRICE: \$9.35 including shipping.

*** SEE SPECIAL OFFER BELOW ***

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This program upgrades the popular Psion "CHESS" program (as sold by Timex) to spectacular hi-res format. Included with the tape is an easy-to-follow info sheet detailing how to modify (and back-up) the original program. No longer any need to play along using a "real" chess board!

PRICE: \$9.95 including shipping.



If you purchase our "SCRAM" NVM board and SRAI HI*RES EXTENDED BASIC and mention this ad, you'll get a FREE copy of YEAR-AT-A-GLANCE. Offer good only until July 1, 1987.

The Peak of Quality... from SILICON MOUNTAIN COMPUTERS
C-12, Mtn. Stn. Group Box, Nelson BC V1L 5P1, CANADA (604)352-1668

FOR YOUR SUPPORT

SHAWN STAMP, 3405 Mark Lane, Norton, OH 44203, (216)825-8957, challenges you to see just what your TS2068 is capable of doing! CHOPPER COMMAND is billed as a fast-paced action game that takes over where Rambo left off. As a chopper pilot in the Air Force, you rescue POW's from the jungles of Vietnam. Comes on cassette with instructions to transfer the program to your disk system for only \$17.50 (includes S&H).

CURRY COMPUTER, P. O. Box 5607, Glendale, AZ 85312-5607, (602)978-2902 offer a full line of items for the ZX81/TS1000, TS1500, TS2068, and QL computers. Call or write for their current catalog.

CHIA-CHI CHAO, 73 Sullivan Drive, Moraga, CA 94556-1209, has his latest catalog available. Included in its pages are bargains like Diamond Mike II and the Great Game and Graphics Show, both for only \$10. Compass, the 2068 BASIC compiler/Z80 assembler program for only \$10. Word Twister and Vocabuilder for only \$10 and Money Machine II for only \$11. Most programs are available on either cassette or Aerco disk for the TS2068.

ROBERT D. HARTUNG, 2416 No. County Line Road, Huntertown, IN 46748, (219) 6373081, has offered to place orders for Beta Basic 3.0/4.0 through the British supplier for pre-paid US customers. BETA BASIC 4.0 allows structured programming and procedures on Spectrums or Spectrum-emulated computers by adding 100 new commands and functions to the machines. Price for the BB 3.0/4.0 combination for use with the 128K Spectrum machine is \$28.50; for Beta Basic 3.0 only, for 48K Spectrum emulated TS2068's, the cost is \$27.50. Prices include handling in US funds by check or MO. Contact Mr. Hartung for more details. Beta Basic may still be ordered directly from BetaSoft, 92 Oxford Road, Moseley, Birmingham B13 9SQ, England, and charged to MasterCard for 15.95 pounds, including postage.

LARKEN ELECTRONICS, RR#2 Navan Ontario, Canada K4B-1H9, is currently marketing the LKDOS Cartridge. LKDOS is a replacement DOS for Aerco, Ramex, Oliger, and Larken Disc Systems, and claims to allow compatibility between the four popular TS2068 disk IF systems. LKDOS supports all the token commands such as LOAD, SAVE, CAT, ERASE, MERGE, OPEN, CLOSE, etc., and files types can be BASIC, code, or array. The DOS claims to be fully Spectrum and OS-64 compatible and supports NMI snap-shot memory saves when used in conjunction with the necessary hardware. Priced from \$65.00.

FRED NACHBAUR announces "ZX-TERM*80". This full-feature terminal program requires only a SCRAM board (or equivalent), plus 16K or more RAM, and a Westridge or Byte-Back modem. Features: 40, 60, or 80-column screens; separate adjustable windows for input and output; Xmodem up/downloading of ASCII files, Sinclair programs, or Sinclair variables. Custom graphic sets possible. Supplied with relocater, user options, "useful POKEs" for customization, and technical info for hackers. Takes only 4K of user RAM (plus the *K static RAM area), so allows over 10K for files even in 16K. \$24.95 from Silicon Mountain Computers, C-12 Mtn. Stn. Group Box, Nelson, BC V11 5P1 Canada.

E. A. BROWN COMPANY, 3404 Pawnee Drive, Alexandria, MN 56308, (612)763-8847, is currently distributing their latest catalog. Hardware and software items can be found for Timex, Atari-ST, and IBM computers and compatibles. Some bargains of interest to Timex computer enthusiasts are full size printers, 2068 Mikrodrives, and TS1000 and 2068 software.

TS-2068 SAFE DISK UPDATE, 1317 Stratford Ave., Panama City, FL 32404, (904) 871-4513, is a quarterly newsletter devoted to the support of users who have upgraded to disk drive systems. A section features the Oliger Safe Disk Operating System (SDOS). The annual subscription is \$12.

NICOLSON NIGHTTIME NETWORK is a free BBS with a Timex sort-of SIG operated by sort-of sysop Fred Nachbaur. (604) 354-4666 is the number to call to get access to the latest hi-res programs, files, etc. The BBS operates 1800-0900 PST every day and all day Sunday. Set your modem for 8-N-1 and give it a try. Complete details in a coming issue of SWN.

LEMKE SOFTWARE, 2144 White Oak, Wichita, KS 67207, has put together the Pixel Print Press, a newsletter highlighting Lemke Desktop Publishing software programs for the TS2068. Products shown include the popular Pixel Sketch & Graphics Editor, the new Pixel Print, an Icon Package, a Font Package, a Pixel Print Utility for Tasword, and Checkbook Budget Master. Send a SASE for the latest Lemke Software info.

GREY & CLIFFORD COMPUTER PRODUCTS, P. O. Box 2186, Inglewood, CA 90305, (213) 759-7406, announces the release of the latest version of SPECTERM-64 (TS-4.1). This latest release is available on either JLO Safe (v 2.3 or later) or AERCO disks. \$35.00 + \$3 S&H. Also new to the Grey & Clifford line of products is TMX-64, a 64 column BBS software package for the TS2068. The package is said to allow you to set up a 300/1200 baud BBS system on your TS2068 computer. Written by Kurt Casby, the price is \$30.00 + \$2 S&H. Call for details.

DAN ELLIOTT, Rt 1 Box 117, Cabool, MO 65689 is offering service for several different makes of home computers including the Timex-Sinclair line. Prices vary, so contact Dan to get the latest info. He is also offering to make mods to TS computers and peripherals per published articles.

JOHN McMICHAEL, 1710 Palmer Dr., Laramie, WY 82070, is marketing hardware and software to interface the TS2068 to a Commodore 1520 Printer/Plotter. Prices for the hardware range from \$14.95 for a bare board to \$30.95 for an assembled and tested unit. The interface hardware includes driver/demo software. Other software packages include Pic-Plot, an auto screen dump utility, Bannerific, banner making software, and CMS/1520, a compatibility patch for Customized Mscript V5 or V5.2. Software is priced at \$8.95 each, ppd.

Dear Reader

from Basil Wentworth

The management of SYNCWARE NEWS has asked me to take on the post of editor, as of the first issue of 1988. I am both honored and delighted at the prospect.

This preliminary announcement is intended to let you know what I am thinking at the moment, and to ask your help in charting the course for the magazine.

Why the change? Tom Woods has finally reached the point where he can no longer give SWN the time that it deserves. Heaven knows that he has already given enough of his time to make us all forever grateful. We respect his decision not to give us anything less than his best, and wish him well in his next activities.

So Jeff Moore, who has been our editor, is moving up to the publisher's chair, and they've asked me to assume the editor's green eyeshade and blue pencil.

Me? I'm Basil Wentworth, whom you may remember as author of the BASIL's COMPENDIUM series, as well as occasional other articles. I spent 5 years as an electrical engineer, back in the days of vacuum tubes and slide rules, served a few years in the US Navy during World War II, and retired from a career in the US Foreign Service, after diplomatic and consular assignments in six foreign countries.

Along the way, I was lucky enough to marry Jocelyn, who has borne me two delightful children. My daughter has, in turn, presented me with two grandchildren.

After my family, my main loves are (in no fixed order) serious music, computers, and words. I would like to have posterity remember me as a tuba player and a writer of clean limericks.

WHITHER SWN?

I have no plans for revolutionary change in this magazine that we love. My main criterion for every decision will continue to be, as it has been for my predecessors, to try to satisfy as fully as possible the interests of you, the readers. I realize that I can't succeed completely in this task. (As Abraham Lincoln never quite put it, you can't fulfill all of the people all of the time.)

I want to do my best at it, though. But I'll need your help.

I'll need two kinds of help: first, we can't give you what you want unless you let us know what you'd like. And second, we can't publish material that doesn't exist.

So PLEASE:

(1) Let us know what you want. Let us know what you don't like about what we have been doing, what you want that we haven't been publishing. (Sure,

let us know what you DO like, too.) And let us know WHY you like or dislike it.

Jeff Moore tells me that the recent reference to PC computers stirred up a tremendous amount of interest.

GREAT!

I'll address that subject in greater detail later on (probably for months to come), but for the moment let me say that IBM has unwittingly done us all a big favor by provoking you into writing. Keep the letters coming. Please.

While I'm talking about Brand X, let me assure you that I have no intention of abandoning, or even de-emphasizing, the TS computers as long as we have an audience and a supply of material.

Which brings me to:

(2) Make your bid for immortality by submitting your own manuscripts for publication.

What type? Well, so far, SWN has tried to keep a balance in its articles--a balance between the ZX81 and the 2068, with a smattering of other stuff; and a balance between hardware and software. This balance was maintained because the editorial staff thought you wanted it that way.

Maybe you don't.

Maybe you want something completely different, as Monty Python used to say. (Or was it "entirely" different?)

How about "real world" applications, for instance? How about ways to trap your children or your spouse into becoming computer buffs?

How about articles on programming structures? On ways to get small computers to do the jobs that the giants do?

If you have a subject that you think would interest our readers, send it in. Or, if you prefer, drop us a line asking our opinion.

BRAND X

We Sinclair aficionados are in somewhat the same boat as are speakers of Spanish. The native Spanish speaker "knows" that his own language is the most beautiful, the most expressive, ever developed. Ditto for speakers of Italian, Arabic, Black English, Urdu, and all the others. And every one of them is right, too. For me, as for all the others, my own native language is the only one that really says what I mean, in spite of any specific technical superiorities of some other languages.

Spanish, for instance, when it comes to spelling.

Sinclairware is another example. I have yet to see a computer, large or small, that is as easy to program as these little machines. Not even the QL. But, just as English dominates the commercial world, whether the Spanish speaker likes it or not, so does the wilderness ignore Sir Clive's cries. If you're rational, you'll learn how to cope with the inferior language that IBM has sold to the world.

But I, like most of you, have a strong emotional attachment to the TS dialect, even apart from its actual superiority. After all, the PClones, if I may coin a word, were developed for users, rather than for programmers. And to me, programming is what it's all about.

All of which is preamble to a reaffirmation of my pledge not to abandon you strong-hearted Sinclair mono-maniacs. I don't even own a computer that is not of Sinclair lineage (except for that Hong Kong imitation that could best be described as Sinclair, bar sinister). So I expect to be using my TS computers as long as they run.

I even gave a TS2068 as a birthday present to my son, who is taking a Master's degree in computer science at Indiana University.

SyncWare

Jeffrey D. Moore, Publisher
Basil P. Wentworth, Editor
Fred A. Nachbaur, Technical Director
Thomas J. Bent, Asst. Editor

All subscription information, billing, and ad artwork should be addressed to:

SyncWare News
602 S. Mill St.
Louisville, OH 44641
(216) 875 - 1257

Article submissions, letters to the Editor, Support listings, Classified ads, and puns should be addressed to:

SyncWare News
1413 Elliston Drive
Bloomington, IN 47401
(812) 336 - 0837

Article submissions, hardware, formidable questions, and everything else, should be addressed to:

SyncWare News
C-12, Mtn. Sta. Group Box
Nelson, BC V1L 5P1
Canada (604) 354 - 3858

Back issues of SWN are available for \$3.50 each postpaid. Volume #1 (for the TS1000) is available for \$16.95.

SWN is done entirely on TS computers. Submissions are preferred as word processed text files recorded on good quality tape. Memotext for the TS1000 and Mascript for the TS2068 are the word processors of choice. Documents submitted in Tasword Two and other word processors must be arranged in a 52 column format. If you do not have a word processor, but you feel you have a good idea, then don't hesitate to submit it. Complete writer's guidelines are available upon request from the Indiana Editorial Office.

BUT--here's another thought:

There are lots of computer topics, including those listed above, that are vital, but not specific to any brand of computer. Why not explore some of them?

For instance, Tom Woods gave a beautiful talk at the Indianapolis show on the subject of making money with your computer. Maybe we can talk Tom into doing an article on the subject. Or maybe some of you would like to help stir the pot.

I give you fair warning: if no-one else submits any articles on the subject, I'm likely to try my own hand at it.

Which brings me to another hobby horse I'd like to ride for a moment.

USERS' GROUPS

That great show in Indianapolis was largely the work of Frank Davis and Paul Holmgren, both of whom were represented in the July-August issue of SWN. Sure, they had a lot of help from many others, but I don't think that any of those others will begrudge a little extra praise for Frank and Paul.

(And while I'm at it, my heartiest congratulations to Paul on winning that SWN prize that I had set my cap for. Paul's program reminds me of the yachtsman's advice: sail in such a way that not only you win, but also that your competitors are glad that you won.)

But back to business: Frank has been principal organizer of the Indiana Sinclair Timex Users' Group (ISTUG). I have found this organization to be so enjoyable and informative that I heartily recommend membership in a Users's Group to anyone. In fact I'm so sold on UG's that I'm ready to make the following offers on behalf of SWN:

(1) To any UG that regularly publishes a newsletter of interest to TS enthusiasts, we'll offer an exchange of subscriptions--you give us a free subscription to your newsletter, and we'll give you a freebie to SWN.

(2) If you submit any of your newsletter articles that we find appropriate to reprint in SWN, we'll pay our regular author rates for it. We'll make payment to the Group, and then it's up to you whether and how to split with the individual author. On the other hand, if an author asks us to reprint something that he has already published, we ask that he accompany his submission with a letter from the earlier publisher, giving us permission, and indicating whether or not they want an acknowledgement. In such case, we'll pay the author directly. (This will apply to all publishers, of course, whether or not they are associated with users' groups.)

(3) It goes without saying that we'll continue to publish without charge information designed to help TS fans form new groups, to strengthen existing groups, and to help groups communicate with one another.

SO WRITE!

Generally, I prefer to have your comments by letter, for the reasons given below. If you can't write legibly, do the best you can, and I'll ask our local pharmacist to try to decipher it. He's

used to the scrawls of physicians, who are probably the worst writers, as a class, than anybody else. But after all, why not use the old word processor, and make your writing (if not the meaning) unavoidably clear?

The reasons I prefer writing, rather than telephoning, are:

(1) I'm usually unavailable at the times when you'll want to call. Take my advice, and never retire to a university environment, if you value your free time.

(2) There are three signs of advancing age: the first is failing memory, and...somehow, I seem to forget the other two. I'm more likely to remember just what you want if you write it down (assuming that I can understand what you write).

(3) Unlike Rabbi Hillel, I don't always think clearly while standing on one foot. I'm more like Wordsworth, in that some of my best thoughts are recollected in tranquility.

So I encourage you to write, in the first instance. If we need to get together by phone after I understand the problem, we'll try it. But please write first, to:

Basil Wentworth
1413 Elliston Drive
Bloomington, Indiana 47401

FORUM

SYNCWARE NEWS welcomes correspondence from its readers. Some editing of letters may be necessary for brevity or to enhance clarity.

Computerfest Update

The proposed San Francisco T/S Computer Fest has apparently been postponed indefinitely...

Plans for a one-day, Mid-West User Group get together are in the formative stage. The greater Cleveland or greater Columbus areas are under consideration as the meeting place. If Columbus is chosen as the site, rumor has it that a tour of the CompuServe facilities could possibly be included in the day's activities...

SUNSTATE WINTERFEST--

The Northeast Florida T/S User's Group will be hosting the Sunstate T/S Winterfest '88 in Orlando, Florida, March 4-6, 1988. Although SWN has received no official notice of the fest, we have learned that the fest will be at the Orlando Marriot Hotel. The group 'fest' rate at the hotel will be \$90 a night. Since the tourist season will still be in full swing, advanced registration will be a must. There are several other hotels in the area.

Fees are currently being advertised as:
advance: \$5 single, \$9 family
at door: \$8 single, \$12 family
vendor tables: \$50 each

For more information, contact the Sunstate T/S Winterfest, 249 Harden Ave., Orange City, FL 32763.

New SyncWare Address

Effective immediately, please send all submissions, announcements, letters to the Editor, and all other material of editorial interest to:

Basil Wentworth
Editor, SyncWare News
1413 Elliston Drive
Bloomington, IN 47401

All correspondence regarding advertising and subscriptions should be addressed to:

Jeff Moore
Publisher, SyncWare News
602 S. Mill St.
Louisville, OH 44641

Please DO NOT send any material regarding SyncWare News to Tom Woods. Doing so will result in unnecessary delays in responding to your correspondence.

TS GRADER GOES PUBLIC

Dear Editor - I am writing to announce that I am putting on of my programs, T/S GRADER for the 2068 into the public domain. I am busy with other projects and see little purpose in extensive advertising for such a limited market. On the other hand, it is the best program of its type that I have seen (I wrote it because I was dissatisfied with other similar programs). I would like any interested persons to be able to obtain it, therefore, any owners are free to give copies of both the program and documentation to friends, user groups, etc., with no obligation to me.

Some of the many features of T/S Grader are machine code speed, it handles up to 255 classes, 46 students per class, with 66 grades per student. Less classes results in more students being handled, and so on. Grades can be weighted, bonus and demerit points included in averages, and statistical analysis can be calculated.

There are many more features in this \$20 program. If someone can not find a friend to make a free copy from, I will still sell it for \$15 to cover the documentation costs. I really would prefer that the program be gotten from a source other than myself though.

Robert C. Fischer
804 Old York Hwy, North
Apt 3-B
Dunlap, TN 37327

Z88 News

SCI, the American company of Sprinter rotary printer fame, has invested money in Sir Clive's Cambridge Computer and has a member of SCI on Cambridge's Board of Directors according to PCW Magazine. Industry rumor is that SCI will be backing the introduction of the laptop Z88 into the United States very soon. As a side note, European sales of the Z88 are expected to top 20,000 units by the end of 1987.

STORAGE FOR THE MASSES

Dear Editor - I have been at sea for the past six months, and have not had the opportunity to keep up with "Timex-Sinclair happenings". Looking over my recently received back issues of SWN, I get the impression that the Mikrodrive is now out, and that more and more people are opting for floppy disk.

Is there a floppy disk system on the market that utilizes commercially available disk AND that doesn't cost an arm, leg, and/or your first born? I sure would like to convert to 5-1/4" floppy disk, but the last information I had on a system was from AERCO which carried some Portuguese(?) system at an initial cost of over \$500!!!

Is there a moderately priced floppy disk system for the TS2068 on the market? If so, who carries it and what is its price?

Sergio Frost
San Diego, CA

Sergio - It is true that the Mikrodrive mass storage systems are not as popular as they once were. The major systems for the TS2068 are AERCO, Oliger, and Larkin. Contrary to your letter, the AERCO system is US born and bred. We use the ARECO system at SWN. Stay away from the Remex brand drives they offer though, they've been known to cause some problems. Fred Nachbaur has some very good things to say about the Larkin system. The Oliger system has a large following and is the preferred system of Tom Woods.

If I were recommending a system for a new user, I would probably lean toward the Larkin system at this time because of its pricing and its advertised compatibility with the other two major systems (I have not yet seen this feature demonstrated in person, though). Prices on all the systems have dropped some as of late, contact the vendors of your choice to see what the current cost of a system is.-jdm.

A SHOT HEARD ROUND THE WORLD

I feel like the little boy who let the genie out of the bottle. Never before have we received a response like the one you gave us when we mentioned IBM PC's and their clone cousins in Tom Woods' two part article on the subject. The number of letters and post-cards we amassed positively took us by surprise.

As much as we would like to print every letter in its entirety, space just doesn't allow us. The following then represents a random sampling of the mail concerned with the PC subject:

Dear Editor - I do not want to see IBM PC computer information in SyncWare News. I will continue to subscribe to SyncWare News as long as it contains information for the TS computers (even if it means sharing its pages with 'other' computers).

I am not about to abandon my TS1000 or TS2068 computers. I have too much money invested in them, especially the TS2068. I am saddened that SyncWare News feels the TS computers are now doomed.

Dennis Silvestri
New Haven, CT.

Dear Editor - I have been thinking for some time of graduating to a new system. I have hardly outgrown my TS1000, but look with envy at the things available for PC's. I was surprised at SWN for bringing this problem up front. My later reaction was "OK, I'm listening." A few days later, while going through "SKY & TELESCOPE", I realized the programs for sale therein held a lot of interest for me. I like my system, with it's Oliger upgrade and Larkin disk, but how long can the rest of the world be ignored? The recent ads for QL's at \$99 caught me up for a bit, but that route is another dead end.

Mel Richardson
Windsor, Ontario

Dear Editor - Per your PC articles. I don't have a PC compatible machine...yet! But I agree with your forecast of the future. Like most Timexers, I'm a computer freak. I own an old Apple II +, an Atari 800XL, a RS 100, RS PC 3 and 7, a CoCo II, a CoCo III (I work for Radio Shack), a TS2068, several TS1000's, two TS1500's, two QL's, and a Commodore 128. Not to mention a ton of peripherals. But I must admit, the TS1000 is my favorite.

Although I'm a bit unusual (not unless you have two heads-ed.), I look at the PC articles as a vehicle to give our TS computers a 'free ride.' Since support is dwindling, perhaps the PC will bring in additional readers (subscriptions) so that the we can continue the TS coverage.

We all know that as long as there is just one TS1000 on earth, there will be at least one Timex computer freak! It's the nature of the computer--it captures its owner!! We may lose you--or me--but another will pop up to replace us. 2nd, 3rd,...nth generations of Timex discoverers!

I sell Tandy computers and to this day people still tell me "I started out with a TS1000" or "I still have a TS1000 in the closet. What can you do with it?" I have the perfect answer...give it to me, I'll make another cult member with the little marvel!

Keep up the good work, take care, and let's get on with the PC articles.

Dallas Swindal

Dear Editor - First and foremost, I simply MUST have my SyncWare News! Yours has consistently been the best of all the newsletters for the Timex computers that I have ever seen. Most single issues are themselves worth a year's subscription price in terms of useful, quality information. The staff of the News has done a tremendous job and deserves the sincere gratitude of all TS/ZX users.

I have a suggestion in answer to the problem posed on page 1 of SWN 4:6, concerning the fact that our machines are disappearing. One possible way to find a replacement or spare machine is to run a wanted-to-buy ad in the local newspaper or shopper's guide. Put notices up on local community bulletin boards in banks, supermarkets, etc. It also might pay to check out neighborhood garage and rummage sales. Who knows what might turn up, and a spare machine can be worth it's weight in gold to a user with a considerable investment in software and peripherals.

I would also like to comment on your idea to try some articles on the IBM PC and it's clones. This

machine is rapidly becoming as prolific as was our TS1000's in their heyday, and I have no objection to seeing some articles on it. As a matter of fact, with the expertise that all of us have gained from our experiences with our own machines, we might be able to show the 'mainstream' computer world a thing or two!

Gary Robinson
Neenah, WI

Dear Editor - You asked for input regarding conversion of SyncWare News to PCWare News:

While the 'PC' may not be the Perfect Computer, given the manner which the superior QL has been marketed and ignored by our group of TS programmers - the lowly PC could well be the Preferred Computer, especially for the non programmer/hacker computer user. No, I am not confusing SWN with Quantum Levels; but as you editorialized, our beloved 2068 is struggling mightily against the inevitable.

As I see it, the question is how long do we permit our old and faithful friend to suffer before we give him the coup de grace. Since we can not quite bring ourselves to endorse the QL...long live the big blue chip! Or 'fail safe' as they once said in the aircraft industry.

One thing for sure, there are a lot of good PC publications. In order to succeed, PCWare News should be of a more 'homespun' nature. We TS'ers ain't use to the tinsel and glitter that shrouds the hallowed halls of PC heaven.

Ya' all know of a loyal, unenlightened person and/or persons that would like to buy a better than new TS1000, TS2068, and QL so I can afford to get one of them PC thingamajigs? Or should I just donate them to the curator of anachronisms? On the other hand, long as they are still working...why?

Kenton Garrett
Lansing, KS

Kenton - I've just got to break in here. PCWare News was never our intention. PC enlightenment was. My first computer was/is a TS1000. And like your first lover, how can anybody forget their first computer. In my 'day job', I use everything from a \$29.95 TS1000 to a mega-buck IBM mainframe. Size does not make one computer better than another, certainly cost doesn't.

The decision to exclude QL material from SWN and produce a separate magazine devoted to that machine was one of management. We felt we could better cover the QL, maintain current levels of TS/ZX coverage, and keep everyone happy. Maybe this is not the case. Let us know how you feel on the subject.-jdm

Dear Editor - Your column "SyncWare Examines the IBM PC" was most interesting. I hope you follow up on this.

After using every model of Sinclair, up through the QL, I finally graduated to an 'used' IBM PC, to which I have added all the goodies. This was far less expensive than adding disk drives, etc. to the QL.

Stan Nagrod
Mamaroneck, NY

Dear Editor - Your decision to run an article on the IBM really caught me by surprise. I had just a few days earlier made the decision to move up from my present TS2068 system to an IBM compatible. Your decision to run articles on the IBM are a welcomed addition to an already fine newsletter.

I feel the move up to another system is a natural progression for a serious user (I use mine in business). While the 2068 is a great little computer, it does have limited capabilities. And, as already pointed out, it is 'out of print'. In short, if it breaks, you may as well use it for a paperweight. Also, in my own case, as my needs have placed more of a burden on the computer, inherent 'bugs' within the system become more of a problem. Those bugs cause few if any problems when just playing games, but when using long complicated memory programs, they show up.

Tom McHargue
Montgomery, AL

Dear Editor - In response to your column regarding the PC in SyncWare News 4:6, I must tell you that my only interest in computers is the ZX81.

Roy Brann
South Pasadena, CA

Dear Editor - Suh, you can continue to mention IBM if you all act REAL apologetic. I do cast lustful glances at Leading Edge, but it feels like infidelity.

You have to realize that I among dozens quit reading the 'slicks' 'cause they never mention my TS computers. Now, if you are going to load up with other computers, the 'slicks' are cheaper (on special constantly) than SWN and TDM.

Joan Kealy
El Paso, TX

Dear Editor - You asked for a reaction to the possibility of SWN covering the IBM PC. Personally, I have zero interest in MS-DOS machines. No matter how low the price goes, or even if they give them away, I don't want one. I see the Amiga and Atari ST/Mega as much more interesting for hobbyist. MS-DOS is boring, boring, boring.

Sinclair machines have enormous potential. In my view, neither you nor TDM have yet contributed much toward the development of that potential. Move us! Shake us! Goad us! Help us! Guide us!

An example: it may be too late now, but back when Timex first went out of business, we could have used a Standards Committee sponsored by a magazine such as SWN, to establish standards for disc especially, and to elicit cooperation among 3rd party developers. If that had happened, maybe we would not now have five different disc systems, all mutually incompatible.

This whole subject needs to be addressed, and sorted out, in detail. It might be of little interest to the general audience, but the software developers are desperately interested in the emergence of a single standard DOS for Sinclair machines, so that one would no longer have to produce 5 or 6 different versions of 'serious' utility software.

Jack Dohany
Redwood City, CA

Dear Editor - Your idea of articles on PC's is good. We can use them as a comparison to our TS systems.

I sure like your wide range of article subject matter. I always find useful and educational information in SWN.

There is so much doing with disk drives, how about an article on programming to make use of disk memory in running a program, such as by menu.

D. F. Wagner
Canby, OR

Mr. Wagner - We ran an article discussing just that topic back in SWN 4:4. Author Bret Lanus made several suggestions for implementing memory overlays in his article entitled 'Program Segmentation'.-jdm

Dear Editor - I read the article in the July/August issue of SWN concerning the IBM PC. My first reaction was quite negative. The limited number of pages in each issue require that you select the content very carefully. Because the availability of information about Timex/Sinclair is rapidly declining, every inch of space becomes more valuable.

After thinking about this for a day, I changed my mind. While I do not expect to transfer to an IBM PC or compatible machine, it is certainly a subject of immediate concern to the TS community. The lack of support for the remaining TS dealers and publications, unless there is a miraculous change, means the end of the line. SWN is a natural media in which to present alternatives to TS users.

Byron DeFries
Bonduel, WI

Dear Editor - I too feel as you about the TS computers going by the way of the evening sunset. I recently purchased a PC compatible and really enjoy it. I will continue to use all my TS computers as long as they function. I have one spare for each model. I have too many good programs that I still like to run on them.

I would appreciate any PC articles that you care to print in SWN. Don't make the columns too short.

John Sumpolec
Las Vegas, NV

Dear Editor - As a loyal user of Timex computers, I was disappointed to read the front page of the July/August issue of SWN on which you write that we seem to be "...in the final stages of computer 'orphan-dom' and will ultimately lead to the demise of our beloved computer systems." I am disappointed for two reasons: first, that there are so few of the computers left, and second, that you seem to have given up already. On the one hand, I can understand why you might be feeling a little depressed after your computer bites the dust and you couldn't find another one. On the other hand, you should not be so negative about prospects for our hobby. Yes, I said hobby, because that's what it is! If your readers wanted to get IBM-compatible machines, they would. Readers of SWN, TDM, and other Timex-devoted publications are not about to give up on their machines, although they might give up on an overly-negative

newsletter! Maintaining and adding on to a Timex is as educational and enriching a hobby as woodworking or stamp collecting, in my opinion.

The TS2068 is as good a computer, if not better than, the Atari 800XL or XE series, or the Commodore 64. Its BASIC is an excellent tutorial language, yet it leaves room for growth to perform lots of tasks admirably. Like a friend of mine once said, "how many word processors do you need?" I'm pretty much satisfied with either Tasword or VIEWord on the 2068. Some people say they want the "power" of the IBM-compatible computers, but there's nothing I'd want to do with a computer that I can't do with my TS2068's. Yes, I have two of them. I realized about a year ago that a backup computer would be prudent, but since then, I've found significant uses for both! Maybe I should get a backup for my 'backup'(?).

I use an IBM PC for church work. We have a Compaq Deskpro in our library at work, so I've had plenty of opportunities to use PC's. We also have a couple of HP 85's at work in our lab, they are a pain to program. You can't even use string arrays! After using the HP85 for awhile, I couldn't take it, so I brought my backup TS2068 to work with me (it had been on my son's desk). I use it to write memo's, do statistics as a super programmable calculator, and to play "Silent Service" during lunch. Even then, it's probably under utilized.

Has Timex of Portugal stopped making the TX-2068? If not, it might be time for you to support it to a greater extent. You could at least consider it a source of new 2068's, although we would need to alter the peripheral's connector, of course.

I guess what I'm trying to do is to encourage you to NOT start covering PC-compatible machines, unless you do it in a separate publication. There are enough magazines which cover the MS-DOS world better than you could, so stick to what you do best, or step aside so someone more interested in Timex machines can take over. I suggest that SWN cover more of the world-wide "Spectrum-compatible" picture.

I, for one, am not ready to give up on my TS2068's. The children love my 'old' TS1000...I've rambled enough for two letters, but it seemed you needed the encouragement. Keep up the good work, and forget about the IBM-compatible stuff.

Ed DeBoer
Sauk Village, IL

If I could have published only one of the Forum Letters we received regarding the IBM question, this letter would have been it.

Thank you, Mr. DeBoer, for putting things into their proper perspective, and for causing me to reflect on the true purpose of this magazine.-jdm.

Dear Editor - Death will come to us all, but most of us prefer not to dwell on the unpleasant thought. Such has been my attitude towards the Timex computers.

Two or three years ago, at age 65, I bought a TS1000 with the idea that in this day and age I should try to understand something about these machines that seemed to be ruling our lives. My original \$30 hard-

ware investment has grown to several hundred dollars. My investment in time learning to write programs has been immense. However, this mental challenge in pure logic has been a revelation to me as it has helped me to understand why screw-ups occur in the business world.

Of course, like everyone else, I have been wondering in which direction I should move when the time comes. My past experience with IBM has been on a business basis. I recall their service contract was more expensive than I could handle on a personal basis.

I would like to continue with SWN relating to some different brand of computer. I must say that recently, as an owner of a TS1500, I have felt somewhat left behind with most of the articles referring to more recent Timex or Sinclair models.

Robert I. A. Gray
Morristown, NJ

Robert - We try very hard to maintain a balance between hardware and software, TS1000/1500 and TS2068 articles. It is sort of like trying to walk a tight-rope blindfolded with your feet tied together while at the same time attempting to juggle bowling balls. Please note that almost all of the hardware and software projects/programs for the TS1000 will work and run on the TS1500.-jdm.

Dear Editor - Referring to SWN 4:6, I am in favor of your including PC articles.

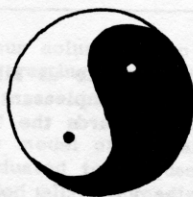
My major interest has been in machine language programming. The reason I have not, as of yet, bought a PC or PC clone, is the uncertainty or difficulty of obtaining calls or interrupts and other technical info for these computers. Your writing articles on these subjects would ease my concern.

Arthur Cant
Wayland, MA

Arthur - There are many good books on machine language programming the PC and its clone cousins. Most local computer and book stores should be able to give you a good selection. The manuals that come with MS-DOS include a good description of the interrupts, which is the simplest way to reach down through the DOS to machine code level.-jdm.

Dear Editor - I agree 100% with your Editorial on gradually moving over toward the PC. Its a very logical move, but is it worth the effort with all those dedicated PC mags already on the market? Is there a suitable niche to be found? I'll be with you guys whatever route you take.

Larry Chavarie
Ontario, Canada



There you have it folks. Right now the tide seems to flow toward including PC articles within the covers of this magazine. How do you feel on this subject? Will you let us know?-jdm.

USING 2068 REPORT CODES

by Paul Bingham

This may sound like just another dry ROM article to some 2068 owners. But I promise you it is not. Now to prove this to you, type in and run the short program called "Fun Report Codes" (Listing 1). Instead of the old "0 , OK", you will see a smiley face in front of the line and statement number! How did we do that?

I'll give you the long and the short of it. The short of it is that our little machine code program in line 20 changed the contents of the "N" character in the 2068's UDG area to a smiley face. When we called upon a particular error code it printed the face.

The long of it really isn't that long. If you flip to page 288 in the 2068 user's manual you will find various report codes listed. Change the 101 in line 30 to 255 and rerun the program. Now change it to zero and rerun it. Now try 1 and run it. It is obvious that we have hit upon the method of obtaining the ROM's error codes. Numbers 255 and 1 thru 26 give us all the report codes listed in the manual. If you were to try placing 27 in line 30, you will see a report hiding in ROM that doesn't appear in the manual--"S Missing LROS"! Using numbers beyond 27 give mostly gobbledygook until we use 101. This prints N from the UDG which is the character we've exploited in Listing 1.

The Z80 chip that is the heart of every 2068 (and ZX81 or TS1000) recognizes eight special one-byte calls in machine code called "restarts". They each call specific ROM addresses. In our case, we used RST 8 (207) which calls the report code routine! We can use this any time we choose to as long as we first set HL as a pointer to the report code we want. In Listing 1, we set HL equal to the address in RAM of our 101. A little experimenting may turn up some other useful symbols besides our UDG "N" or the ROM's resident report codes. And they are so easy to call!

I hope you will explore this area--let me know if you find any thing interesting! My address is : P. Bingham, POB 2034, Mesa, AZ 85214.

```
1 REM          Fun Report Code
2
3 10 FOR t=45000 TO 45030: READ
4 n: POKE t,n: NEXT t
5 20 DATA 33,192,255,54,60,35,54
6 ,66,35,54,165,35,54,129,35,54,16
7 ,35,54,153,35,54,66,35,54,60,33
8 ,134,191,207
9 30 DATA 101
10 40 RANDOMIZE USR 45000
```

© , 40:1

Listing 1

READ RESTORE & BUMP FOR THE 1000

by Gregory C. Harder

If you have ever tried converting programs written for other computers to run on the TS 1000 then you are probably aware that the DATA, READ, and RESTORE statements are frequently used commands which are not available in SINCLAIR 8K BASIC. The machine code programs presented in this article can be used to replace these basic statements.

Listing 1 contains three separate routines; READ, RESTORE, and BUMP, which require two dedicated variables, D\$ and V\$, which should be thought of as the DATA\$ and VALUE\$.

The data statement is replaced by a properly formatted D\$;

```
XX10 LET D$="1,2,3,4,A,B,C,D,"
```

will be the data list to be read. Note that each data item is separated by a comma and that the last character in D\$ is also a comma. Very long data lists can be most easily created by string concatenation;

```
XX10 LET D$="A,B,C,D,E,"
XX20 LET D$=D$+"1,2,3,4,5,"
```

The value of the data item read from D\$, whether string text or a numeric expression, will always be returned as V\$, therefore, if a numeric result is expected VAL V\$ must be used.

READ (USR 16550)

If both D\$ and V\$ have been initialized, then each time READ is called it will locate the current data item in D\$, transfer it to V\$, then increment the data word pointer to the next data item to be read.

RESTORE (USR 16693)

This short routine will just reset the data word pointer to the start of the data list.

BUMP (USR 16652)

This is a versatile routine which can be used in several ways. When BUMP is called, it will move the data word pointer forward in the data list by "JUMP" items and then READ that item. The JUMP value must first be set by POKEing address 16393 with a value of 1 to 255. Unlike a true BUMP statement, direct negative (backward) jumps are not supported.

BUMP would be useful, for example, in reading each third data item from a long data list, such as telephone numbers, important dates, etc.; call RESTORE, POKE 16393,3, and then use BUMP in a FOR-NEXT loop.

BUMP can also be used as a form of the command SETW TO (set word to) by setting the data pointer to a predetermined item in the data list and starting READ there. For example, to start reading at the 27th item in the data list; call RESTORE, POKE 16393,26, call BUMP.

ENTER DATA FROM LEFT TO RIGHT
AND FROM TOP TO BOTTOM

0E	49	ED	5B	10	40	EB	7E	B9	28
0C	FE	80	CA	4B	0D	C5	CD	F2	09
C1	10	EF	FE	5B	23	4E	C8	23	46
23	E5	09	EB	E1	C9	CD	82	40	ED
4B	7B	40	09	C5	C5	01	00	00	E5
A7	ED	52	E1	38	02	CF	1A	7E	FE
1A	28	04	23	03	18	EE	03	E1	09
22	7B	40	0B	78	B1	20	02	CF	1B
C5	0E	5B	CD	84	40	E5	23	46	E5
09	D1	CD	5D	0A	E1	C1	71	23	70
23	E5	ED	43	40	40	CD	9E	09	CD
82	40	D1	C1	09	D5	ED	4B	40	40
C5	ED	B0	C1	E1	3E	8C	ED	A1	20
04	2B	36	1A	23	E0	18	F5	CD	82
40	3A	09	40	3D	28	91	D5	C1	ED
5B	7B	40	19	F5	7E	E5	A7	ED	42
E1	30	95	FE	1A	23	13	20	F2	F1
3D	20	ED	ED	53	7B	40	18	DE	21
00	00	22	7B	40	C9				

LISTING 1. READ, RESTORE, AND BUMP
MACHINE CODE

Using the SETW TO form of BUMP can also be used to replace any RESTORE nnnn statements when converting programs.

Using BUMP, in conjunction with RESTORE, it is possible to move the data word pointer to any data item in the data list, forward or backwards.

```
1 REM **>MINIMUM OF 190 BYTES
10 LET L=16514
20 PRINT "INPUT CODE."
30 REM **>ENTER ""3"" TO STOP
40 INPUT C$
50 SCROLL
60 IF C$="" THEN GOTO 20
70 IF C$="3" THEN STOP
80 PRINT L;" ";C$
90 POKE L,16+CODE C$+CODE C$(2)
100 LET L=L+1
110 GOTO 20
```

LISTING 2. HEX LOADER

ERROR CONDITIONS

When using READ and BUMP the following ERROR REPORTS may occur;

- R Out of data, attempting to READ past the data list.
- S Undeclared data item, a data item separator (,) has been used without an associated data item.
- 2 Undefined variable, D\$ and/or V\$ not initialized, or the text of VAL V\$ forms a valid, but not defined, variable name. Occurs if string text inadvertently used as a numeric expression.
- C The data item in V\$ does not form a valid numeric expression when converted by VAL V\$.

```

0 REM :? GOSUB ?(RND FOR ASN
?#VAL LN PAUSE AT ( LOAD RETURN
??7005 777 FAST FOR LPRINT TA
N LN AND GOSUB ??RND VAL
FAST GOSUB ? LPRINT S INT
/ INPUT LPRINT 57RND?4 INT
VAL ?LN RND FAST ?? FAST SGN
LN ? LPRINT AT ??? FAST GOSUB
?RND RND LN LN RND SGN AT STR#
GOSUB ?RND RND VAL GOSUB AT LPRI
NT Y# GOSUB 54, 7 STEP / PRINT
LN AND RND X# STR# AT GOSUB ??
RND; PRINT K# RETURN 74 PAUSE
LET X4 GOSUB GOSUB ??RND/ THEN 5
67RND TAN
3 REM READ, RESTORE, AND BUMP
BY GREGORY C. HARDER
10 REM **** USR CALLS ****
20 LET READ=16550
30 LET BUMP=16652
40 LET RESTORE=16693
50 LET JUMP=16393
60 REM **** READ DEMO ****
70 PRINT AT 20,10;"READ DEMO"
80 LET V$=""
90 LET B=10
100 LET V=0
110 REM **** USE KEYWORDS FOR
**** FUNCTIONS IN D$.
120 LET D$="THIS,IS,A,DEMO,PROG
RAM,FOR,READ,30,2*6,8+7,B*B*10,C
OS 0,INT 8.3,INT SIN 90,"
130 REM **** RESET DATA POINTER
140 IF USR RESTORE THEN
150 FOR N=1 TO 14
160 IF USR READ THEN
170 SCROLL
180 IF N>7 THEN LET V=VAL V$
190 PRINT "DATA ITEM ";N;" = ";
V$;TAB 25;"V=";V
200 NEXT N
210 SCROLL
220 SCROLL
230 PRINT AT 0,0;D$
240 GOSUB 520
250 REM **** BUMP DEMO ****
260 PRINT AT 0,10;"BUMP DEMO",,
270 LET A$="A,B,1,C,D,2,E,F,3,G
,H,4,I,J,5,K,L,6,M,N,7,O,P,8,Q,R
,9,S,T,10,U,V,11,W,X,12,Y,Z,13,"
280 LET D$=A$+D$
290 REM **** SET JUMP VALUE ***
300 POKE JUMP,3
310 IF USR RESTORE THEN
320 REM **** READ EACH 3RD ITEM
330 FOR N=1 TO 16
340 IF USR BUMP THEN
350 PRINT "DATA ITEM NO. ";N*3;
TAB 18;"=";TAB 22;V$
360 NEXT N
370 SCROLL
380 SCROLL
390 PRINT AT 16,0;D$
400 GOSUB 520
410 REM **** SETW TO DEMO ****
420 PRINT AT 0,8;"SETW TO DEMO"
430 POKE JUMP,8
440 IF USR RESTORE THEN
450 IF USR BUMP THEN
460 FOR N=1 TO 9
470 IF USR READ THEN
480 PRINT "DATA ITEM NO. ";N*8;T
AB 15;"=";TAB 17;V$;TAB 20;"READ
NO. ";N
490 NEXT N
500 PRINT ,,D$
510 STOP
520 PRINT AT 21,0;"PRESS ENTER
TO CONTINUE."
530 INPUT G$
540 CLS
550 RETURN
9000 SAVE "READ"
9010 LIST 3

```

LISTING 3. READ, RESTORE AND BUMP DEMO

PROGRAMMERS NOTES

Both READ and BUMP will return to BASIC with register BC reset to zero. A convenient method of expressing a numeric result, in one line, would therefore be;

XX10 LET A=USR READ+VAL V\$

which would be equivalent to READ A.

For string data items, a graphic pound sign in the data string will be converted to a comma in V\$, this is so data string such as "Denver,Co." can be printed. Use a graphic pound sign whenever a comma is required.

Address 16507 contains the data word pointer which should not be altered until the READ/BUMP routines are completed.

LOADING THE PROGRAM

Use the HEX LOADER shown in listing 3, or some other suitable loader. REM line one must contain at least 190 bytes. Enter the code as shown in listing 1, check your inputs for any errors. When done, POKE 16510,0 and then delete all lines greater than zero.

READ, RESTORE, and bump are now ready to be used in your basic programs, save the routines to tape.

Listing 3 illustrates how to use the routines and some of the programming possibilities.

RELOCATING THE ROUTINES

Use listing 4 to move the routines to a different area of memory. When prompted, input the destination. When the transfer is completed the new USR calls will be printed, write them down.

```

10 FAST
20 PRINT "INPUT DESTINATION",,
30 INPUT D
40 RAND D
50 POKE 16551,PEEK 16434
60 POKE 16552,PEEK 16435
70 RAND (D+2)
80 POKE 16598,PEEK 16434
90 POKE 16599,PEEK 16435
100 POKE 16624,PEEK 16551
110 POKE 16625,PEEK 16552
120 POKE 16653,PEEK 16551
130 POKE 16654,PEEK 16552
140 FOR N=0 TO 189
150 POKE (D+N),PEEK (16514+N)
160 NEXT N
170 PRINT "READ=";D+36,,"BUMP="
;D+136,,"RESTORE=";D+179

```

LISTING 4. RELOCATOR

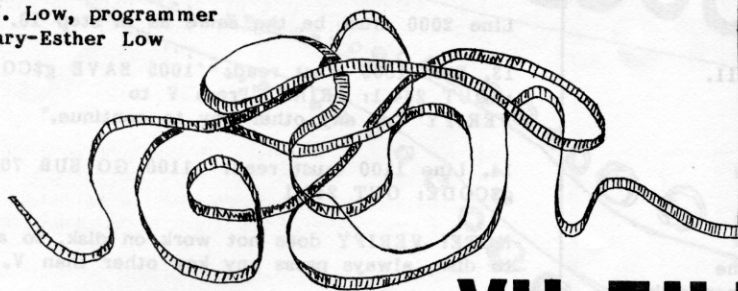
! OFF THE WALL

ZX/TS DAFFYNITIONS

SIN - no-no's like alcohol and gambling
SYNTAX - surcharge on above no-no's
RAM PACK - herd of male sheep
LONG WORD - supercalifragilisticexpialidocious
BYTE - wound inflicted by a mosquito
BIT - past tense of "byte"
MEGABYTE - wound inflicted by a Texas mosquito
HEADER PLUG - a potato inserted into a custom exhaust pipe
EE PROM - grad party for electronic engineers
DIP IC - backseat driver's comment on spotting a chuckhole
TAN - what you get on the beach
ARCTAN - what Noah would have got if it stopped raining
ACS - used for cutting wood
PLOT - a devious plan
TAB - a diet soft-drink
INPUT - hip yuppie term replacing "feedback"

2068 TAPE TO DISK CONVERSION FOR

by David N. Low, programmer
with Mary-Esther Low



VU FILE & VU CALC

(EDITOR'S NOTE: The program tape-to-disk conversions shown in this article are for use with the Aerco FD-68 Disk Interface. The procedures are presented "cookbook style", so they should be easy to follow and to modify for other disk interfaces. Just substitute your interface's commands at the appropriate spots. SyncWare News welcomes articles such as this, and will continue to print them as space allows.)

TO CONVERT VU-CALC FROM TAPE TO DISK

(Before starting either conversion, have a formatted diskette ready and in your disk drive.)

1. Load the entire program from cassette. Exit the program by going to the menu and using option 1.
2. Then type the line:
OUT 244,1: MOVE "VC.BIN",29328,5225
3. Now you must change line 10 to read:
10 CLEAR VAL "29327": BORDER LN PI : PAPER
LN PI : INK LN PI : LOAD "s"CODE 16384: INK 7
4. ADD LINE 11: (that is 31 spaces.)
11 PRINT AT 19,0;"
":FLASH 1
:PRINT AT 19,12;"Loading":FLASH 0
:out 244,1:MOVE "VC.SCR",:STOP
5. Rewind the program tape, GOTO 10, and start the tape.
6. When you get the stop message, stop the tape, and change line 10 to:
10 CLEAR VAL "29327":BORDER LN PI:PAPER
LN PI:INK LN PI:CLS:CAT "VC.SCR",
:CAT "VC.BIN",:GOTO VAL "3200"
7. Delete line 11.
8. Change line 4000 to:
4000 GOSUB VAL "1100":LET a\$a\$+".BIN",""+STR\$
zz+",""+STR\$ (PEEK bfre+256*PEEK (bfre+1)-zz):MOVE
"a\$",:CLS:GOTO USR e2
9. Now save this by typing:
MOVE "VC-TtoD.BAS",10

This will allow you to load from tape and save to disk.

10. Now you need to change line 1000 to:
1000 GOSUB VAL "1100":LET a\$a\$+".BIN","":CAT
"a\$",:CLS:GOTO USR e2
11. Then save by typing:
MOVE "VC.BAS",10

This version will load from disk, and save to disk.

Tape back-ups are not a bad idea, especially if you ever pull a crazy stunt like we did, and zap your disk interface!! The next steps provide for loading from disk and saving to tape.

12. See that line 1000 reads as in step 10 above.
13. Line 4000 should be like the original, but with OUT 244,1 added, so that it reads:
4000 GO SUB VAL "1100": SAVE a\$CODE zz, (PEEK
bfre+256*PEEK (bfre+1)-zz): OUT 244,1:CLS
: GO TO USR e2
14. Save by typing:
MOVE "VC-DtoT.bas",10

You should now have five files on your disk:

VC.SCR	
VC.BIN	
VC.BAS	Load from disk; save to disk.
VC-TtoD.BAS	Load from tape; save to disk.
VC-DtoT.BAS	Load from disk; save to tape.

To backup VU-CALC with screen from disk to disk:

1. Load the program from disk. Exit with #Q command, and at the menu use option 1.
IF YOU HAVE ONLY ONE DRIVE:
2. Insert back-up disk and give commands:
MOVE "name.BAS",10: MOVE "VC.BIN",29328,5225
3. Change line 10 to:
10 CLEAR VAL "29327": BORDER LN PI : PAPER
LN PI : INK LN PI : CAT "VC.SCR",
:INK 7:STOP

4. Add line 11, (that is 31 spaces):

```
11 PRINT AT 19,0;"
```

```
" :FLASH 1
```

```
:PRINT AT 19,12;"Loading":FLASH 0  
:out 244,1:MOVE "VC.SCR":STOP
```

5. Insert MASTER DISK and GOTO 10.

6. At STOP, insert BACKUP DISK, and GOTO 11.

IF YOU HAVE TWO DRIVES:

The procedure is the same as above except:

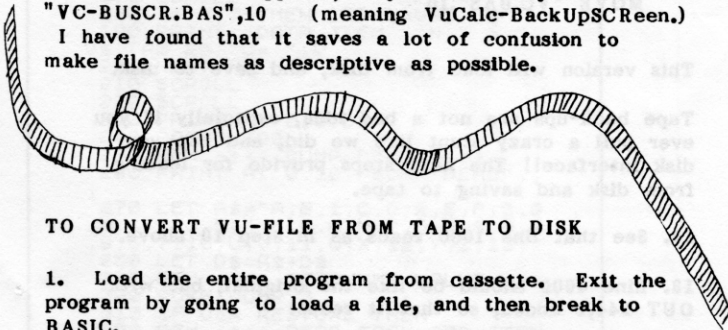
- I. Leave out the STOP at the end of line 10

II. Put the MASTER DISK in one disk drive, the BACKUP DISK in the other, and make the proper disk drive designations in the MOVE commands in step 2, the CAT command in line 10, and the MOVE command in line 11.

- III. GOTO 10 as in step 5, and omit step 6.

NOTE: This version, which is good only for making screen backups, using only the command GOTO 11 after loading and STOP appears, may be saved by MOVE "VC-BUSCR.BAS",10 (meaning VuCalc-BackUpScreen.)

I have found that it saves a lot of confusion to make file names as descriptive as possible.



TO CONVERT VU-FILE FROM TAPE TO DISK

1. Load the entire program from cassette. Exit the program by going to load a file, and then break to BASIC.

2. Then type the line:

```
OUT 244,1: MOVE "VF.BIN",28288,7216
```

3. Now you must change line 50 to read:

```
50 BORDER 1: PAPER 1: INK 1: CLEAR 28287  
: LOAD "T"CODE 16384,6912: OUT 244,1  
: INK 7
```

4. Add line 51: (THAT IS 31 SPACES,)

```
51 PRINT AT 19,0;"  
"; FLASH 1: PRINT AT 19,  
12;"Loading": FLASH 0: MOVE "VF.SCR",  
: STOP
```

5. Rewind tape, GOTO 50 and start the tape.

6. When you get the STOP message, stop the tape, and change line 50 to:

```
50 BORDER 1: PAPER 1: INK 1: CLEAR 28287: CAT  
"VF.SCR": CAT "VF.BIN",
```

7. Delete line 51.

8. Change line 1005 to:

```
1005 LET g$=g$+"BIN",""+STR$ s+"",+STR$ 1: MOVE  
"g$": PRINT "Press V to VERIFY" or any other key  
to continue."
```

9. Save by typing:

```
MOVE "VFTtoD.BAS",50
```

The following will allow you to load files from tape, and save them to disk.

10. Change line 2000 to:

```
2000 CLS : PRINT "Load a file": GO SUB 6000: GO  
SUB 7000: LET g$=g$+"BIN",""+STR$ s  
: CAT "g$": GO TO USR a
```

11. Save by typing:

```
MOVE "VF.BAS",50
```

12. If you would like to be able to make tape back-ups of VU-FILE disk files, then make one more version as follows:

Line 2000 must be the same as in step 10.

13. Line 1005 must read: 1005 SAVE g\$CODE s,l

```
: OUT 244,1: PRINT "Press V to  
VERIFY" or any other key to continue."
```

14. Line 1100 must read: 1100 GO SUB 7000: VERIFY g\$CODE: OUT 244,1

NOTE: VERIFY does not work on disk, so after saving to disk, always press any key other than V.

15. Save by typing:

```
MOVE "VF-DtoT.bas",50
```

You should now have five files on your disk:

VF.SCR

VF.BIN

VF.BAS

Load from disk; save to disk.

VF-TtoD.BAS

Load from tape; save to disk.

VF-DtoT.BAS

Load from disk; save to tape.

To backup VU-FILE with screen from disk to disk:

1. Load the program from disk. Exit program by going to load a file, and then break to BASIC.

IF YOU HAVE ONLY ONE DRIVE:

2. Insert back-up disk and give commands:

```
MOVE "name.BAS",50: MOVE "VF.BIN",28288,7216
```

3. Change line 50 to:

```
50 BORDER 1: PAPER 1: INK 1: CLEAR 28287: CAT  
"VF.SCR": OUT 244,1: INK 7: STOP
```

4. Add line 51: (THAT IS 31 SPACES,)

```
51 PRINT AT 19,0;"  
"; FLASH 1: PRINT AT 19,  
12;"Loading": FLASH 0: MOVE "VF.SCR",  
: STOP
```

5. Insert MASTER DISK and GOTO 50.

6. At STOP, insert BACKUP DISK, and GOTO 51.

IF YOU HAVE TWO DRIVES:

The procedure is the same as above except:

- I. Leave out the STOP at the end of line 50

II. Put the MASTER DISK in one disk drive, the BACKUP DISK in the other, and make the proper disk drive designations in the MOVE commands in step 2, the CAT command in line 50, and the MOVE command in line 51.

- III. GOTO 50 as in step 5, and omit step 6.

Best wishes for your continued and improved enjoyment of two fine programs!

QUICK MODE for 1500-10000

by Fred Nachbaur

We leave the wonderful world of true hi-res for a moment, to show you just one of any number of fascinating possibilities that can result from experimenting with the ZX81's interrupt-driven display routines.

Those of you who have played with Wilf Rigger's "Nova" package already know of some of the neat things you can do by "messing with the interrupts." For instance, smaller displays can be created to increase the time available for computing, thereby speeding up the machine by up to 4 times the normal "SLOW" mode rate.

We're all used to the FAST vs. SLOW dilemma. In FAST mode, the machine cruises right along, but you can't see the display. In SLOW mode you have a continuous display, but the overall speed often leaves much to be desired. Well, how about a FULL-SIZE, continuous display, while running almost three times as fast as the normal SLOW mode? You got it! The QUICK-mode routine in this article works with most BASIC or machine-code programs. The exceptions are other programs that already modify the interrupts for custom displays (as WRX16-based software, the Software Farm programs, possibly others).

Nothing comes for free, however. QUICK mode is a bit of a compromise, in that the display is slightly "ethereal" compared to normal SLOW mode. The best explanation is a brief description of how QUICK works.

Most of you know that, in SLOW mode, the computer is only working on your program during the "margins" above and below the actual TV picture. This happens at a rate of 60 frames (more precisely, "fields") per second. QUICK mode operates by doing different things during alternate fields.

During the odd-numbered fields, the display operates exactly as in SLOW mode. During even-numbered fields, however, the ENTIRE field is used for computing. The net effect is an almost 3x speed increase. The drawback is that the picture is displayed only 30 times per second, interspersed with blank screens. This results in a somewhat ghostly flashing effect that is especially pronounced on inverse graphics. However, the display is at least stable and lacks the jagged edges that result from using PAUSE within your loops in FAST mode.

HOW IT WORKS

Refer to the disassembly to understand how QUICK works. The routine is invoked with RAND USR 8192, which executes the little routine at 2000h. This first calls SLOW mode, then re-vectors the IX register. The next time the computer encounters a JP (IX) in the interrupt routine, it will be redirected to our display handler instead. We also initialize variable TOGL to contain a pattern of alternating "1"s and "0"s.

The first part of our service routine, from 2012h to 2066h, is a carbon-copy of the main display loop in the ROM. It decrements the FRAMES counter, scans the keyboard and starts the vertical sync pulse, and processes the keyboard debounce information. It then turns off the vertical sync pulse with OUT (FF),A, and sets up HL to point to the first byte of the display file "echo."

We then rotate the TOGL variable. The JP C that follows will cause one of two things to happen, on alternate frames.

If a "0" was rotated out of the TOGL variable, things proceed as usual (FLD1). We generate the top margin, then create the display, then generate the bottom margin. Finally, we jump back to the beginning of the service routine to do it all over.

If a "1" was rotated out of the TOGL variable, then we jump to FLD2. Again, we make the top margin. But then, instead of creating the display, we instead create another "margin," this time 192 (C0h) lines long, in its place. Again we finish off with the bottom margin before returning to the start of the loop. Notice that the computer is working on your program the whole time (except for brief interrupts at the end of each line, for house-keeping purposes).

INSTALLING QUICK MODE

As listed, the program assumes that you have memory in the 8-16K region (as with a 64K pack, or using a SCRAM or similar NVM board). If you don't have memory down there, see "Making Changes," below.

Start by entering a 1 REM line followed by 162 characters. Add the lines of the simple BASIC decimal loader, Listing 1. RUN the listing, and enter the values of Table 1. When done, overwrite Listing 1 with Listing 2 (don't change or delete line 1).

```
1 REM =====162 SPACES=====
10 FOR A=16514 TO 16675
20 INPUT B
30 LET A$="( " +STR$ B+":")
40 LET A$=A$(LEN A$-3 TO )
50 PRINT A$;
60 POKE A,B
70 NEXT A
```

LISTING 1: DECIMAL LOADER

RUN Listing 2 to save to tape. After saving, or later re-loading, the QUICK code will be booted into low memory (starting at 8192). You can now load other software.

TABLE 1: "QUICK" CODE

```
205: 43: 15:221: 33: 18: 32:253:
54:122:170:201:221: 33:129: 2:
201: 0: 42: 52: 64: 43: 62:127:
164:181:124: 32: 3: 23: 24: 2:
70: 55:103: 34: 52: 64:208:205:
187: 2:237: 75: 37: 64: 34: 37:
64:120:198: 2:237: 66: 58: 39:
64:180:181: 88: 6: 11: 33: 59:
64:203:134: 32: 8:203:126:203:
198:200: 5: 0: 55: 33: 39: 64:
63:203: 16: 16:254: 70:123:254:
254:159: 6: 31:182:160: 31:119:
211:255: 42: 12: 64:203:252:253:
203:122: 6:218:130: 32:205:146:
2:237: 95: 1: 1: 25: 62:245:
205:181: 2: 43:205:146: 2:195:
18: 32:205:146: 2:253: 54: 40:
192:205:146: 2:253: 54: 40: 31:
205:146: 2:195: 18: 32: 1:150:
0: 33:130: 64: 17: 0: 32:237:
176:201:
```

USING QUICK MODE

After loading your program, you must invoke QUICK mode with RAND USR 8192, followed by RUN (or GOTO xxx) to start your program. How about that, eh? If you have a hardware video-reverse switch, you'll probably find the pulsations less annoying if you switch to reverse mode.

```
1°REM =====162 SPACES=====
10 SAVE "QUICK"
20 PRINT "ENABLE 8-10K RAM, TH
EN PRESS ANY KEY TO INSTALL Q
UICK MODE"
30 PAUSE 4E4
40 CLS
50 PRINT " RAND USR 8192 TO EN
TER QUICK MODE",,,," USR 8204
OR FAST TO EXIT"
60 RAND USR 16664
```

LISTING 2: "QUICK" PROGRAM

RAND USR 8204 can be used to exit back to normal SLOW mode. However, entering FAST mode will also wrench control from the QUICK routines. Similarly, PAUSE, LOAD, SAVE, and entering or deleting program lines will also return to the normal display.

You can easily modify your BASIC programs to make use of QUICK mode. Simply replace all FAST commands with RAND USR 8192, and all SLOW commands with RAND USR 8204. You'll find the ghostly display considerably better than staring at a blank screen during FAST mode printing loops, etc., with much less of a speed compromise than if you did everything in SLOW mode.

MAKING CHANGES

The QUICK code can be moved just about anywhere you'd care to put it; e.g. above RAMTOP, in high memory (if you decoded the M1* line), or leave it in a REM statement. Simply change all JPs, and modify the LD IX command accordingly. Similarly, you can choose just about any unused system variable for TOGL; I chose this one because very little existing software uses this location for its variables (Hot Z is a notable exception).

TYD★BYTS

PC8300 VIDEO FIX

One of the most common complaints with the PC8300 is that the characters tend to have a "splayed" look, with horizontal lines sticking out to the right. No, it's not because the Chinese designers didn't know how the characters are shaped. It's simply a matter of overdrive (video level or "contrast" too high).

The fix is remarkably simple. Connect a resistor (I used 4.7K) between pin 35 and pin 40 of the custom chip. This is the chip nearest the modulator. Pin 40 is the pin furthest to the right in the front row, as viewed from the front of the machine. Pin 35 is five pins to the left of pin 40. If you are experienced at soldering, simply solder the resistor directly to the "shoulders" of the pins. If not, you'd be better off removing the chip, and connecting the resistor to the socket on the underside of the board.

Lower values (e.g. 3.9K, 3.3K) will give more attenuation.

A 2068 PRINTER DRIVER FOR SPECTRUM MODE

by P. H. Skipper

In reply to the request from Mr. George Cary in the May/June SyncWare News for a big printer driver for the Spectrum mode 2068, the accompanying machine-code program is submitted.

When supplemented by BASIC drivers as appropriate for the 2068 or the Spectrum and if POKEd as indicated below, this printer driver contains the following features:

- It is located in high memory, below the UDG's, and below the area that the Spectrum uses as a temporary store when NEWed. Thus, once installed, it will not be interfered with except by machine code which overwrites it.
- It is not relocatable (except by being rewritten).
- It works, without modification, with either the Aerco or the Tasman Centronics interfaces.
- It can be POKEd to work with either the 2068 or the Spectrum.
- It includes a screen copier as well as an LPRINT capability.
- It does not include an LLIST capability.
- It includes Tom Woods' "up-arrow" trick for sending Hex codes to the printer. (I.e. enter an up-arrow in the text followed by the desired two-character Hex code. To print an up-arrow, enter an up arrow in the text followed by another up-arrow.)
- It can easily be POKEd to include the necessary codes used by various printers to implement their graphics modes.
- It provides a small or a large screen copy.
- It allows a choice of the left margin when copying the screen, thus permitting the small screen copy to be located horizontally on the page as desired.
- It is modular. The LPRINT section can be used alone or just accompanied by the "up-arrow" section.

BASIC Drivers:

Figure 1 shows an example of a BASIC driver for this machine code when used with the 2068. Figure 2 shows one for the Spectrum. Of course, this BASIC code can be incorporated in one's own program, also.

```

1 LOAD "2a&tcythi8"CODE 64815
,384: STOP
2 POKE 26703,0: POKE 26704,5:
STOP: REM 2040 Printer
3 POKE 26703,34: POKE 26704,2
54: STOP: REM SPIRIT-80 Printer
4 POKE 65057,0: RANDOMIZE USR
64815: STOP: REM Small-screen
COPY
5 POKE 65057,1: RANDOMIZE USR
64815: STOP: REM Large-screen
COPY

```

Figure 1. BASIC Program for
2068 Print Driver.

```

1 LOAD "3a&tcythi8"CODE 64815
,384: STOP
2 POKE 23749,244: POKE 23750,
9: STOP: REM 2040 Printer
3 POKE 23749,34: POKE 23750,2
54: STOP: REM SPIRIT-80 Printer
4 POKE 65057,0: RANDOMIZE USR
64815: STOP: REM Small-screen
COPY
5 POKE 65057,1: RANDOMIZE USR
64815: STOP: REM Large-screen
COPY

```

Figure 2. BASIC Program for
SPECTRUM Print Driver.

(EDITORS NOTE: You may use HOT-Z or your favorite hex loader to input the machine code for this project. If you don't have a hex loader program, we've provided one for you in listing 1. Enter the hex numbers listed in the table from left to right, top to bottom.)

```

Start Address=64815
21 FE FD CD DA FD 21 00 40 06 08
CD 54 FD 21 00 48 06 08 CD 54 FD
21 00 50 06 06 CD 54 FD 21 06 FE
CD DA FD C9 C5 11 C4 FD CD 70 FD
CD 19 FE 28 0C 11 20 00 AF ED 52
11 C8 FD CD 70 FD C1 10 E5 C9 E5
CD CC FD E1 06 20 C5 E5 D5 11 C4
FD 06 08 7E 12 24 13 10 FA D1 62
6B 06 08 C5 E5 06 08 CD 19 FE 28
02 06 04 CB 06 CB 11 CD 19 FE 28
06 CB 0E CB 06 CB 11 23 10 EE 79
CD 81 FE CD 19 FE 79 C4 81 FE E1
C1 10 D4 E1 23 C1 10 BC E5 21 F6
FD CD DA FD E1 C9 00 00 00 00 00
00 00 00 CD 0E FE 21 E6 FD CD 19
FE 28 03 21 EE FD C5 06 04 7E CD
81 FE 23 10 F9 C1 C9 1B 4B 00 01
00 00 00 00 1B 4B 00 02 00 00 00
00 0D 0A 00 00 00 00 00 00 1B 31
00 00 00 00 00 00 1B 32 00 00 00
Checksum=23491

```

Start Address=65035

```
00 00 00 0E 05 0D C8 3E 20 CD 81
FE 18 F7 E5 21 21 FE CB 46 E1 C9
00 18 00 FE 5E 20 3F 3E 0A 32 23
FE C9 FE 5E 20 07 F5 AF 32 23 FE
18 49 FE 40 30 0F D6 30 07 07 07
07 32 66 FE 3E 2C 32 23 FE C9 D6
37 18 EF FE 40 30 0E D6 30 4F 3A
66 FE 81 F5 AF 32 23 FE 18 20 D6
37 18 F0 00 FE 60 20 0E 3E 81 CD
81 FE 3E 1B CD 81 FE 3E 49 18 08
CD 81 FE FE 0D C0 3E 0A F5 CD 09
20 38 02 CF 0C DB BF CB 47 28 0A
DB 7F CB 67 20 ED F1 D3 7F C9 AF
D3 FB 3D D3 7B D3 FB F1 F5 D3 7B
3E F7 D3 FB 3E FF D3 FB F1 C9
```

Checksum=20269

Listing 1: T32068 Hex Loader

```
10 REM T32068 Hex Loader
20 REM Enter A,B,C,D,E,& F as
   Upper Case Letters
100 CLS
110 PRINT "Start Address? ": IN
   PUT $a
115 LET a=$a
120 CLS : PRINT "Start Address="
   $a
130 LET sum=0
140 FOR l=1 TO 20
150 FOR c=1 TO 30 STEP 3
160 INPUT h$
170 IF h$="" THEN LET h$="00"
180 IF h$="s" THEN GO TO 310
190 IF LEN h$>2 THEN GO TO 160
200 LET x$=h$(1): LET y$=h$(2)
210 IF CODE x$<=57 THEN LET x=C
   ODE x$-48: GO TO 230
220 LET x=CODE x$-55
230 IF CODE y$<=57 THEN LET y=C
   ODE y$-48: GO TO 250
240 LET y=CODE y$-55
250 LET z=(16*x)+y
260 IF z<0 OR z>255 THEN PRINT
   AT l,c;"?": BEEP .5,10: GO TO 1
   60
260 PRINT AT l,c;h$
270 POKE a,z
280 LET sum=sum+z: LET a=a+1
290 NEXT c
300 NEXT l
310 PRINT AT 21,0;"Checksum=";s
   um;" OK? Y/N"
320 PAUSE 4*4
330 IF INKEY$="y" OR INKEY$="Y"
   THEN GO TO 360
340 IF INKEY$="n" OR INKEY$="N"
   THEN GO TO 115
350 GO TO 320
360 CLS : PRINT "Save? Y/N"
370 PAUSE 4*4
380 IF INKEY$="y" OR INKEY$="Y"
   THEN SAVE "printdrv" CODE 64815
   ,384
390 IF INKEY$<>"n" OR INKEY$<>"
   N" THEN GO TO 360
400 GO TO 100
```

POKE's (address and decimal value to be POKEd):

Decimal	Hex	Label	POKE
64841	FD48	-----	6 gives a copy of the upper 22 lines of the screen. 8 copies all 24 lines of the screen.
64920	FD98	-----	17 for printers where the MSB activates the top pin. 25 where MSB drives bottom pin.

64931 FDA3 ----- (same as 64920).

64988 FDDC ----- Length of the longest code which will be sent to the printer to put it in the graphics mode, etc. Max. equals 8.

64998 FDE6 grf1 This and next seven bytes (if required) should be POKEd with the code sequence required by the printer to give 640 graphics dots on a line. Any bytes not used should contain zero (NOP).

65006 FDEE grf2 Code sequence for 1280 dots.

65014 FDF6 crlf Code sequence for Carriage Return/Line Feed as required by printer.

65022 FDFE graf Code sequence to put printer in graphics mode.

65030 FE06 norm Code sequence to put printer in normal (non- graphics) mode.

65039 FE0F marg + 1 Left margin for screen copy.

65057 FE21 flgz 0 for small-sized screen copy.
1 for large.

65132 FE6C ----- Printer-specific codes which print the English pound sign. In example shown, 128d (81h) prints this symbol on the dot-matrix printer, and the sequence of 27d (1Bh) (ESC) followed by 73d (49h) prints it on the daisy-wheel printer. (Fortunately, these codes do not interfere on printer for which they are not intended.) POKE to zero (NOP) if not used.

65152 FE80 ----- 0 if no line feed desired at end of each line.
10 for line feed.

65155 FE83 rdy? + 1 9 for 2068.
84 for Spectrum.

65156 FE84 rdy? + 2 32 for 2068.
31 for Spectrum.

Labels:

To assist with an understanding of the machine code, a brief meaning of the labels is given below:

copy Start of screen copier, which ends at "flgz". Also, graphics set-up code to printer.

sec1 Copies upper third of screen.

sec2 Copies center third of screen.

sec3 Copies lower third of screen.

nmrl Normal (non-graphics) set-up to printer.

ecpy End of basic copy routine. Subroutines for sections follow.

sect Start of section copier.

sml_ Jumps here for small screen copy.

esec End of section copier. Subroutines for rows follow.

row_ Start of row copier.

row2 Jump address for DJNZ.

char Start of "character" copier.

ftch Fetch next "character."

fch2 Jump address for DJNZ.

out_ Send "character" out to printer, one vertical strip of dots at a time.

out2 Jump address for DJNZ.

ldC_ Load C register with vertical strip to be sent.

ldC2 Jump address for DJNZ.

sml2 Jumps here if small screen copy.

outC Sends contents of C register to printer via A register.

eout End of "out_" routine.

echr End of "char" routine.

erow End of "row_" routine.

stoC Temporary store for "character" to be loaded into C register.

sto2 Second half of "stoC". Contents vary depending on size of screen copy.

esto End of "stoC".

srow Routine used at start of each row.

code Routine used to send set-up codes, etc.

cod2 Jump address for DJNZ.

ecod End of "code".

Machine Code -

ADDR	HEXCODE	LABEL	MNEMONIC
FD02	21FEFD	copy	LD HL,graf
FD03	00DAFD		CALL code
FD04	210040	sec1	LD HL,4000
FD05	060008		LD B,08
FD06	00D54FD		CALL sect1
FD07	210048	sec2	LD HL,4800
FD08	060008		LD B,08
FD09	00D54FD		CALL sect1
FD0A	210050	sec3	LD HL,5000
FD0B	060008		LD B,08
FD0C	00D54FD		CALL sect1
FD0D	2106FE	nmrl	LD HL,norm
FD0E	00DAFD		CALL code,
FD0F	000000	ecpy	RET
FD10	000000	sect	PUSH BC
FD11	11C4FD		LD DE,stoC
FD12	0070FD		CALL row_
FD13	0019FE		CALL size
FD14	2300C		JR Z,sml
FD15	112000		LD DE,0020
FD16	000000		XOR A
FD17	000000		SEC HL,DE
FD18	11C8FD		LD DE,sto2
FD19	0070FD		CALL row_
FD1A	000000	sml_	POP BC
FD1B	10E5		DJNZ,sect
FD1C	000000	esec	RET
FD1D	000000	row_	PUSH HL
FD1E	00C0FD		CALL srow
FD1F	000000		POP HL
FD20	0620		LD B,20
FD21	000000	row2	PUSH BC
FD22	000000	char	PUSH HL
FD23	000000		PUSH DE
FD24	11C4FD	ftch	LD DE,stoC
FD25	060008		LD B,08
FD26	7E	fch2	LD A,(HL)
FD27	12		LD (DE),A
FD28	24		INC H
FD29	13		INC DE
FD2A	10FA		DJNZ,fch2
FD2B	000000	out_	POP DE
FD2C	060008		LD H,D
FD2D	060008		LD L,E
FD2E	060008		LD B,08
FD2F	000000	out2	PUSH BC
FD30	000000		PUSH HL
FD31	060008	ldC_	LD B,08
FD32	0019FE		CALL size
FD33	2300C		JR Z,ldC2
FD34	060008		LD B,08
FD35	000000	ldC2	LD C,(HL)
FD36	000000		LD C
FD37	0019FE		CALL size
FD38	2300C		JR Z,sml2
FD39	000000		RRC (HL)
FD3A	000000		RLC (HL)
FD3B	000000		RL C
FD3C	23	sml2	INC HL
FD3D	10FE		DJNZ,ldC2
FD3E	79	outC	LD A,C
FD3F	0081FE		CALL prnt
FD40	0019FE		CALL size
FD41	79		LD A,C
FD42	0481FE		CALL NZ,prnt
FD43	000000		POP HL
FD44	000000		POP BC
FD45	10D4	eout	DJNZ,out2
FD46	000000		POP HL
FD47	23		INC HL
FD48	000000		POP BC
FD49	10BC	echr	DJNZ,row2
FD4A	000000		PUSH HL
FD4B	21F6FD		LD HL,crLf
FD4C	00DAFD		CALL code
FD4D	000000		POP HL
FD4E	000000	erow	RET
FD4F	000000	stoC	NOP
FD50	000000		NOP
FD51	000000		NOP
FD52	000000		NOP
FD53	000000	sto2	NOP
FD54	000000		NOP
FD55	000000		NOP
FD56	000000		NOP
FD57	000000	esto	NOP
FD58	000000	srow	CALL marg
FD59	21E8FD		LD HL,grf1
FD5A	0019FE		CALL size
FD5B	2300C		JR Z,code
FD5C	21EEFD		LD HL,grf2
FD5D	000000	code	PUSH BC
FD5E	0604		LD B,04
FD5F	7E	cod2	LD A,(HL)
FD60	0081FE		CALL prnt
FD61	23		INC HL
FD62	10F9		DJNZ,cod2
FD63	000000		POP BC
FD64	000000	ecod	RET

grf1 8 bytes for code sequence which tells printer that 640 dots follow. Used with small screen copy.

grf2 8 bytes for code sequence which tells printer that 1280 dots follow. Used with large screen copy.

crlf 8 bytes for Carriage-Return/Line-Feed code sequence.

graf 8 bytes for code sequence to put printer in graphics mode.

norm 8 bytes for code sequence to put printer in normal (non-graphics) mode.

marg Routine for left margin.

mrg2 Jump for DJNZ.

emrg End of "marg".

size Routine to determine size of screen copy.

esiz End of "size".

flgz Flag which determines size of screen copy.

spnt Start of "up-arrow" print routine.

jmp0 Jumps here after "up-arrow" activity.

jmp1 Jumps here if up arrow sent.

jmp2 Jumps here if next-to-last character was up arrow.

not8 Jumps here if present character not up arrow. Handles first hex character.

mult Multiplies first hex character by 16 and stores in "accu".

sub1 Subroutine if first hex character exceeds 9.

jmp3 Jumps here to handle second hex character.

add_ Adds second hex character to sixteen times first hex character.

sub2 Subroutine if second hex character exceeds 9.

accu Store for 16 times first hex character.

lpnt The LPRINT routine.

pnto Prints text, providing a line feed (if selected) and carriage return at end of each line.

prnt Sends byte in register A to printer.

rdy? Calls BREAK routine in ROM preparatory to testing printer's BUSY line.

tast Test of Tasman interface "printer busy."

```

FDE6 1B      grf1 DEC DE
FDE7 4B      LD C,E
FDE8 00      NOP
FDE9 010000  LD BC,0000
FDEC 00      NOP
FDED 00      NOP
FDEE 1B      grf2 DEC DE
FDEF 4B      LD C,E
FDF0 00      NOP
FDF1 02      LD (BC),A
FDF2 00      NOP
FDF3 00      NOP
FDF4 00      NOP
FDF5 00      NOP
FDF6 00      crlf DEC C
FDF7 0A      LD A,(BC)
FDF8 00      NOP
FDF9 00      NOP
FDDA 00      NOP
FDFB 00      NOP
FDFC 00      NOP
FDFD 00      NOP
FDFE 1B      graf DEC DE
FDFF 310000  LD SP,0000
FE02 00      NOP
FE03 00      NOP
FE04 00      NOP
FE05 00      NOP
FE06 1B      norm DEC DE
FE07 320000  LD (0000),A
FE0A 00      NOP
FE0B 00      NOP
FE0C 00      NOP
FE0D 00      NOP
FE0E 0E05    marg LD C,05
FE10 0D      mrg2 DEC C
FE11 08      RET Z
FE12 3E20     LD A,20
FE14 CD81FE   CALL prnt
FE17 1BF7     JR mrg2
FE19 E5      PUSH HL
FE1A 2121FE   LD HL,flgz
FE1D CB46     BIT 0,(HL)
FE1F E1      POP HL
FE20 C9      esiz RET
FE21 00      flgz NOP
FE22 1800     tpnt JR jmp0
FE24 FE5E     jmp0 CP SE
FE26 203F     JR NZ,lpnt
FE28 3E0A     jmp1 LD A,0A
FE2A 3223FE   LD (FE23),A
FE2D C9      RET
FE2E FE5E     jmp2 CP SE
FE30 2007     JR NZ,not8
FE32 F5      PUSH AF
FE33 AF      XOR A
FE34 3223FE   LD (FE23),A
FE37 1849     JR rdy?
FE39 FE40     not8 CP 40
FE3B 300F     JR NC,sub1
FE3D D630     SUB 30
FE3F 07      mult RLCA
FE40 07      RLCA
FE41 07      RLCA
FE42 07      RLCA
FE43 3266FE   LD (accu),A
FE46 3E2C     LD A,2C
FE48 3223FE   LD (FE23),A
FE4B C9      RET
FE4C D637     sub1 SUB 37
FE4E 18EF     JR mult
FE50 FE40     jmp3 CP 40
FE52 300E     JR NC,sub2
FE54 D630     SUB 30
FE56 4F      add_ LD C,A
FE57 3A66FE   LD A,(accu)
FE5A 81      ADD A,C
FE5B F5      PUSH AF
FE5C AF      XOR A
FE5D 3223FE   LD (FE23),A
FE60 1820     JR rdy?
FE62 D637     sub2 SUB 37
FE64 1BF0     JR add_
FE66 00      accu NOP
FE67 FE60     lpnt CP 60
FE69 200E     JR NZ,pnto
FE6B 3E81     LD A,81
FE6D CD81FE   CALL prnt
FE70 3E1B     LD A,1B
FE72 CD81FE   CALL prnt
FE75 3E49     LD A,49
FE77 1808     JR prnt
FE79 CD81FE   pnto CALL prnt
FE7C FE0D     CP 0D
FE7E C0      RET NZ
FE7F 3E0A     LD A,0A
FE81 F5      prnt PUSH AF
FE82 CD0920   rdy? CALL brek
FE85 3802     JR C,tast
FE87 CF      RST 08H
FE88 0C      ERROR D
FE89 DBBF     tast IN A,(BF)
FE8B CB47     BIT 0,A
FE8D 280A     JR Z,tasp

```


aert Test of Aerco interface "printer busy."

aerp Aerco interface output routine.

tasp Tasman interface output routine.

It is hoped that some of the ideas in this code will assist not only Mr. Cary, but other members of the 2068 family as well.

```
FE8F DB7F      aert IN A, (7F)
FE91 CB67      BIT 4,A
FE93 20ED      JR NZ, rdy?
FE95 F1        aerp POP AF
FE96 D37F      OUT (7F),A
FE98 C9        RET
FE99 AF        tasp XOR A
FE9A D3FB      OUT (FB),A
FE9C 3D        DEC A
FE9D D37B      OUT (7B),A
FE9F D3FB      OUT (FB),A
FEA1 F1        POP AF
FEA2 F5        PUSH AF
FEA3 D37B      OUT (7B),A
FEA5 3EF7      LD A,F7
FEA7 D3FB      OUT (FB),A
FEA9 3EFF      LD A,FF
FEAB D3FB      OUT (FB),A
FEAD F1        POP AF
FEAE C9        RET
```

ROCK CRUSH

A Hi-Res Game for ZX81

Reviewed by Fred Nachbaur

Given the paucity of new software for the ZX81/TS1000, it is indeed heartening to discover that there are still at least a few programmers who, like me, still consider this venerable machine worthy of support. One such programmer is a Mr. S. McDonald, in Scotland. He has written a high-resolution game called "ROCK CRUSH," and is distributing it via Scott Dolan.

I received a copy of a promotional tape that had been sent to WOAI radio in San Antonio, an all-talk clear-channel station at 1200 kHz., which regularly runs a computer-oriented talk show. Since I've always been fascinated by the large number of different ways of achieving hi-res or "quasi" hi-res on the ZX81, I couldn't wait to boot the game to see which scheme this one uses.

Surprise! I haven't seen this before! It appears to be similar to the system used by Julian Chappell in Software Farm's "Z-Xtricator," this actually uses Interrupt Mode 2 on the ZX81! I'm not certain if the central algorithm is indeed similar; it may even be completely new. At any rate, the graphics that result are superb. A major difference is that it will run on 64K machines (Z-Xtricator will not).

Such a work is ROCK CRUSH. You are the intrepid miner, Diamond Dan. Not surprisingly, you must scour underground caverns in search of large (and graphically beautiful) diamonds. One slight problem... as you explore each cavern, you loosen the rocks; the result is that if you dawdle under a rock it will fall on you! Presuming that you can dodge the rocks, though, there are other problems.

Unless you carefully plan your excavation, you might find one or more diamonds unreachable; making further play pointless, since all diamonds must be picked up before progressing to the next cavern.

There are a total of 10 caverns. In the short time I've played the game, I've only made it through the first. Oh, dear, you might be moaning, another "impossible" arcade game with stuff that moves faster than you can think, let alone push keys. Not at all; this is a THINKING game. Even without the hi-res graphics the game would be excellent. There is no time limit. You must "merely" figure out the one-and-only possible approach in each cavern that will result in all diamonds being picked up.

The game loads in five (!) parts. This will make backing-up a little more challenging than usual. With Hot Z, of course, there is no problem; simply copy each section one at a time. However, with a little cleverness and persistence you should be able to back up each section to your disk or other mass-storage. One warning; each section uses a collapsed display file.

Having written a complex hi-res game myself, requiring additional static RAM, I can't help but admire ROCK CRUSH for its fine graphics without any additional hardware. It is also, as stated, a fine game; no-one could ever fault it for being in the trivial and mindless "arcade" genre.

ROCK CRUSH is available from:

Scott Dolan
22 Mayfair Place
East Lowthian, EH21 6HS
Scotland

Price was not listed on the sample copy I received, so write for further information.

BETA BASIC REVIEW

Robert D. Hartung 2416 N. County Line Road, Huntertown, IN 46748

Among the many outstanding things that software writers and hardware developers have provided for T/S users, some have gone unnoticed by potential purchasers who did not happen to subscribe to the newsletters or magazines in which they were reviewed or advertised.

These possibilities are even more likely with some of the remarkable SW/HW for the Spectrum that may be advertised and reviewed only in U.K. publications. One of these is BetaSoft's Beta Basic 3.0, which I "discovered" in their Your Computer ad and a review by ZX Computing. Since many of us have added Spectrum ROM-switches or emulators to our TS2068s and not a few have a Spectrum Plus or a 128 which will run BB in 48K mode, after a year of using this extension to Sinclair Basic I am convinced that for a few dollars investment it provides probably the most powerful Basic programming language on any 8-bit micro available today.

Aside from requiring Spectrum mode, its other drawbacks are that it leaves about 20K-bytes of RAM space for programs and data and requires about 130 seconds to load from tape. As supplied, it is also MicroDrive compatible, and adaptations are available that will work with Wafadrive as well as Kempston, Opus, Ollger, and other Spectrum-compatible DOS. Those who have the ability to put it on EPROM would have a "new" computer almost instantaneously, and would regain the memory it occupies.

The utilities for editing, splitting or joining statements and arrays, listing and altering variables and references, searching and sorting arrays, renumbering and making block-moves or copies with just a few key strokes may be used on any Spectrum or TS2068 Basic program that will load under the 46679 RAMTOP. As long as no BB-specific commands are inserted in the listing, all, or any selected block(s) of the program and data, may be saved again for use in its original mode, or as a BB program if new command-words have been added.

Over 100 new and enhanced commands and functions are available, most of which have from two to a dozen variations. The well-written 90-page manual gives working examples. One of the most powerful features is the capability of defining procedures which can call up an entire routine with a single word. In effect, this enables the user to program new commands. Variables within procedures defined as LOCAL do not affect main program variables having the same names. DEFAULT causes variables to be assigned pre-defined values if no other input is made to them. Parameters may include DATA. READ LINE will read data as strings without the use of quotes. ITEM () checks for the final data item and whether any item is numeric or a string.

Any or all of the character keys may be user-defined to produce an entire program line, a conversion routine with inputs and display of the result, or any other routine with just one key-stroke. Options are provided for single-stroke keying of command-words, letter-by-letter, or a combination of both. The KEY IN command makes possible self-writing programs. Only one LET is required to make a succession of variable or DEFAULT definitions in the same statement. List formats give options for each definition or statement to be shown on a separate line, with some commands indented more than others for easier reading.

TRACE provides step by step display of all or parts of a listing and variable status for analysis or de-bugging. All procedures, key definitions, variables and their contents may be listed for examination or editing, and any reference or sequence of characters may be found anywhere in memory and altered at every occurrence if desired.

By using stored addresses, FOR-NEXT and DO-LOOP routines run at constant speed anywhere in a listing, over twice as fast as T/S Basic at the beginning lines, 5 times faster at the 100th line, and 17 times faster at the 500th--about 10 seconds for a simple FOR n=1 TO 5000: NEXT n. WHILE, UNTIL, ELSE, EXIT IF, and ON are supported. GO TO and GO SUB are also faster, with RETURN from a last line as quickly as from the first. RNDM(n) is 2 1/2 times faster than RND * n, and SINE and COSE give accuracy to 4 places 6 times faster than SIN and COS. SORT will re-order a 400-element array in about 3 seconds. INSTRING and INARRAY may be used to search for any target string wherever it occurs in a string or an array. Hex and decimal conversion is provided, as are bit-wise AND, OR, XOR, and binary equivalents of given numbers 0-65535.

TIME\$ and CLOCK provide a real-time display window and/or audible alarm and/or timed GO SUB. GET will put any keyed character or any part or all of the display into a string for plotting in any CSIZE to any display location. CSIZE provides listing and printing in any character size from 80 columns per line (usable only with a monitor) to one character filling the entire screen. STRING\$ prints any string or character to the screen the indicated number of times. USING or USING\$ will justify and truncate integer and decimal place printouts from a full-size printer as well as in the display. TAB and command words are expanded before being sent to a printer.

Up to 127 windows may be defined, each with its own attributes and CSIZE. Pixel by pixel wraparound ROLL as well as SCROLL in any direction is supported. OVER 2 allows superimposing graphics and printing over what is already in the display without overwriting it. Four special variables may be defined to reset the plotting scale and 0,0 origin coordinates. FILL will surround every closed figure in any designated color or fill any closed figure which is at given coordinates.

I feel even a lengthy review cannot do justice to a program such as this one. If you would like to actually see working examples of what about 85 of the BB commands will do as well as typical listings, I have made up a demo tape about 20K-bytes in length. It is available for \$5.00 to cover the cost of postage, tape, packaging and handling. Please note that the version of Beta Basic included by permission of Beta Soft to drive this demo will NOT allow any editing nor can it be used with any other listing. If you have the normal Beta Basic, the demo may be used with it and the manual as a tutorial.

Beta Basic 3.0 is available for 15.50 British pounds p.p.d. (about \$25.00) from BetaSoft, 92 Oxford Road, Moseley, Birmingham B13 9SQ, England. Payment may be by international money order, or by MasterCard for easier currency exchange.

2068 REM GENERATOR

Dennis Clinton
Sunland, CA

Here is a REM generator USR routine that I would like to share with other avid TS2068 fans.

Although the ability to save and load bytes separately is very handy, there are times when it might be convenient to be able to save/load relocatable USR routines, print fonts, UDG's, etc., with the program they are to be used with.

If these bytes are stored in a REM (I think I hear my TS1000 chuckling softly to itself), then they are protected from RUN/CLEAR, and the entire program can be saved/loaded as one unit.

I modified a routine written by Gregory C. Harder for the TS1500 (see SWN 3:4 pg. 20) to allow for the start of the program area not being fixed in memory, as it is on the TS1000/1500. Automatic line re-numbering of the REM to line 0 was added to protect the REM from unintentional editing and/or deletion.

Here is the disassembly:

Hexcode	Mnemonic	Remarks
010000	LD BC, 0000	;poke with ;spaces ;required + 2
2A535C	LD HL, (prog)	;
23	INC HL	;
3600	LD (HL),00	;line #0
23	INC HL	;
23	INC HL	;
70	LD (HL),B	;
2B	DEC HL	;
71	LD (HL),C	;
23	INC HL	;
23	INC HL	;
23	INC HL	;
0B	DEC BC	;
0B	DEC BC	;
C5	PUSH BC	;
E5	PUSH HL	;
CDBB12	CALL cins	;make room
E1	POP HL	;
C1	POP BC	;
362A	LD (HL),"*"	;fill in REM ;with "*"
23	INC HL	;
0B	DEC BC	;
78	LD A,B	;
B1	OR C	;
20F8	JR NZ,F8	;
C9	RET	;done!

After typing in the code with your favorite hex-loader, and then saving, it can then be loaded to any address, as it is completely relocatable.

The routine fills out the REM with asterisks, which are subsequently overwritten with your data bytes. I for some reason you are impartial to asterisks, simply poke the appropriate address with the code of the CHR\$ you prefer.

Poke the second and third addresses of the code, low/high, with the number of spaces required plus 2 extra, ie., if you need 545 spaces for your code, poke the address with the hexadecimal equivalent of 547 (23/02...low/high order).

Before calling the routine, enter "1 REM". This will be changed to 0 REM and filled out with the number of spaces you poked into the code. Try to avoid listing the REM after placing your data into it. Otherwise you might get an error message such as "invalid color", etc. Remember, since the start of the program is not fixed, only relocatable USR routines should be stored in the REM.

For the benefit of those who are not also TS1000 fans, find the address of the first asterisks by entering "PRINT PEEK 23635+PEEK 23636*256+5". This is where your first byte of code should start.

I really enjoy the articles, programs, letters, and helpful hints from other readers. Hopefully someone will benefit from this brief article and will be encouraged to share some of their knowledge with the rest of us too.

! OFF THE WALL

RAND - McNally's other half
INKEY\$ - counterfeit money that stains the hand
BIN - also called "circular file"
COS - what you tell your kids when they ask "why?"
LLIST - "LIST" with a sticky L key
BORDER - the guy who rents the room upstairs
FORMAT - what it says on Matthew's birthday present
LEN - the fellow next door
VAL - Len's wife
CRYSTAL - their daughter
FLOPPY DISK - loose vertebra
HARD DISK - calcified vertebra
CURSOR - one whose computer crashes once too often
WINDOW - that through which cursors throw their computers after yet another crash
HEX-DUMP (1) - lifting a spell
HEX-DUMP (2) - pure gibberish
DISASSEMBLY - annotated gibberish
LINE FEED - cat-chow for BIG cats
SINCLAIR - Hang-out for sins.

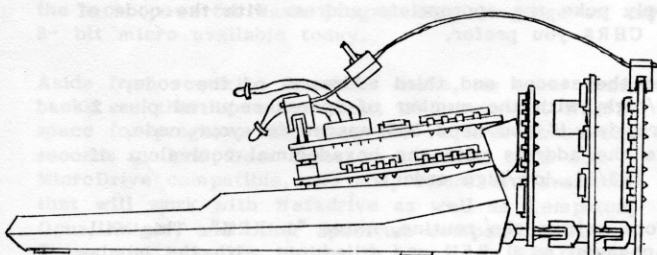
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TYD/BYTES

MSCRIP/OLIGER PRINTER PORT COMPATABILITY

I have a JLO parallel printer port which does not
read the printer's PAPER EMPTY status bit. This is
the signal present on the printer Centronics
connector pin 12 and is required by MSCRIP's AERCO
compatible printer driver software as status bit 1.

My printer asserts BUSY along with PAPER EMPTY. BUSY
is read by the unmodified JLO port so all is well if
you can get the software past the PAPER EMPTY status
check.

In the version of MSCRIP that I have, the PAPER
EMPTY status is read by machine code at 36045 -
36047. Simply poke 0's to those memory locations and
the unmodified JLO port works as though it had the
hardware modification (remember, the mod. only
simulates a paper not-empty status). The removed
code is:

36045 - 203
36046 - 79
36047 - 192

If this code does not appear at these addresses in
your version, you'll have to go exploring. The next
four bytes are 203, 103, 32, and 247. That should
make the search a little easier.

Tyd-Byte Stuff from the desk of Kent Cook

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